DOCUMENT RESUME

ED 071 673 **LI 004 068**

AUTHOR	Clague, P.
TITLE	INSPEC SDI Investigation, 1967-1969. Volume II.
INSTITUTION	Institution of Electrical Engineers, London (England).
SPONS AGENCY	Office for Scientific and Technical Information, London (England).
REPORT NO	INSPEC-R-71-6
PUB DATE	71
NOTE	134p.;(0 References); Chapters 12 to 16
AVAILABLE FROM	INSPEC, The Institution of Electrical Engineers, Savoy Place, London, WC2R OBL, England (5 volumes, HC $30.86)
EDRS PRICE	MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	Economics; Foreign Countries; Indexing; *Information Dissemination; *Information Services; *International Programs; Physics; *Relevance (Information Retrieval); *Use Studies
IDENTIFIERS	England; INSPEC; Scientific and Technical Information; SDI; *Selective Dissemination of Information

ABSTRACT

Volume II of this five volume investigation of the INSPEC SDI system contains discussions of the following topics: (1) Composition of user and control groups and the information use habits of users and controls, (2) thesaurus development and document indexing, (3) problems of printing notification cards and assessing numbers required for each document, (4) recall and precision failure and (5) precision performance of the SDI service. (Volume I is LI004067 and Volumes III through V are: LI004069 through 004071.) (Author/NH)

ED 071673

Report No. R 71/6

INTERNATIONAL INFORMATION SERVICES IN PHYSICS, ELECTROTECHNOLOGY, COMPUTERS AND CONTROL

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY
Institution of Electrical Engineers
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

INSPEC SDI INVESTIGATION

1967 - 1969

Volume II

P Clague

The work reported in this documents was supported by a grant from the Office for Scientific and Technical Information (Ref.SI/20/15) of the Department of Education and Science.

© 1971 The Institution of Electrical Engineers, Savoy Place, London WC2R OBL, England.

ISBN 0 85296405 6

LI 004 068

TABLE OF CONTENTS

Volume I

Chapter		page
Preface		
1	Aims and background of the INSPEC SDI Investigation	1-1
2	General review	2-1
3	Selection of user and control groups	3-1
4	Loss of participants throughout Investigation	4-1
5	Reasons for loss of participants receiving SDI service, November 1968-November 1969	5-1
6	SDI system operation	6-1
7	Delays in service	7-1
8	Computer service for the SDI Investigation	8-1
9	Profile analysis and modification	9-1
10	Interaction with participants	10-1
11	User comments on the service	11-1

Volume II

12	Composition of user and control groups and the information use habits of users and controls	12-1
13	Thesaurus development and document indexing	13-1

14	Problems of printing notification cards and assessing numbers required for each document	14-1
15	Recall and Precision failure	15-1
16	Precision performance of the SDI service	16-1

Volume III

17	Recall performance of SDI profiles	17-1
18	Assessment of the Recall performance of the SDI system in relation to particularly valuable articles	18-1
19	Subjective assessment of SDI system Recall performance	19-1
20	Relation between Precision performance of the system and document indexing	20-1
21	User assessment of the SDI service	21-1
22	Relationship between quality of user's initial statement of information requirements and the subsequent assessment of his profile	22-1
23	Effect of profile analysis and modifications on user's satisfaction with service	23-1
24	Effect of number of document notifications received by user on his relevance assessment	24-1
25	Comparison of relevance assessments based on the full document with those based on card notifications giving varying amounts of document information	25-1
26	Effect of including author names as search terms in SDI profiles	26-1
27	Variation of user satisfaction with compiler of profile	27-1
28	Methods of user interaction in profile compilation	28-1

29	Use made of SDI notifications	29-1
30	Desirability of including material other than English-language periodical articles in the coverage of the SDI service	30-1
31	Novelty of information provided by the SDI service	31-1

Appendix

Volume IV

1A	A proposal to investigate the selective dissemination of information	1A-1
3A	Covering letter to questionnaire	3A-1
3B	Questionnaire: survey of information use	3B-1
3C	Chasing letter	3C-1
3D	Letter of invitation to participate	3D-1
3E	Chasing letter	3E-1
3F	Statement of information requirements	3F-1
3G	Letter to heads of university departments	3G-1
3H	Electronics research workers in universities and technical colleges	3H-1
3I	Details of sampling	3I-1
3K	The role of the Project Associate	3K-1
4A	Size of sample: memorandum	4A-1
5A	Reasons for withdrawal	5A-1
6A	Periodical scanned for the service	6A-1
8A) 8B) 8C) 8D)	Sundry memoranda	8A-1
9A	SDI Service questionnaire	9A-1
9B	Profile analysis and modification	9B-1

Volume V

10A	Communications with users etc.	10A-1
13A	Specimen sheets from descriptor file	13A-1
23A	Time on profile modification and analysis, and user assessment	23A-1
27A	Profiles compiled by compilers 1, 2 and 3	27A-1
28A	Proposed comparison of methods of user interaction in compiling and modifying profiles	28A-1
28B	Letter inviting comments on draft profile	28B-1
28C	Explanatory letter re. above	28C-1
28D	Information Requirements - Queries	28D-1
28E	Notes for visits/interviews	28E-1
32A	Alternative form of SDI notifications	32A-1

Chapter 12

COMPOSITION OF USER AND CONTROL GROUPS AND THE INFORMATION USE HABITS OF USERS AND CONTROLS.

One of the major aims of the SDI Investigation was to discover the effect that provision of an SDI service might have on the use made of information by recipients of the service.

The method adopted was that of a questionnaire (Appendix 12A) sent to participants in the Investigation before the start of the SDI service to establish their use of information at the time. This same questionnaire was again sent to participants when they had been receiving service for some 12 months. It was hoped in this way to establish the pattern of information use before and after the service and therefore to ascertain the changes during that period. Since the questionnaire was also on each occasion sent to a comparable sample of people who did not receive the service, it was hoped that it would be possible to isolate those changes which were unique to the recipients of the service and thus, presumably, due to the effect of the SDI Service.

In order to remove avoidable bias in the answers, the first questionnaire was sent to a random sample of electronics research workers and only after return of the questionnaire were the respondents assigned to either the User or Control group. Similarly no mention was made of the SDI Investigation in the covering letter (Appendix 12B) which purported to be a general survey of information use by electronics research workers and was signed by Mr. T. M. Aitchison in his capacity as Manager, Information Research for INSPEC.

It should be pointed out that all communications relating to SDI throughout the Investigation were signed by Mr. P. Clague as Manager of the SDI Investigation.

After return of the questionnaire those people who were assigned to the user group were sent a letter inviting them to take part in the Investigation. Those assigned to the Control Group received no further communication until the questionnaire was repeated up to two and a half years later.

The period during which the first questionnaire was distributed lasted approximately from June 1967 to April 1968. This rather long period is explained by the fact that collection of the required user and control groups took a long time and it was continually necessary to approach new people.

Because of this long period, and the fact that enrolling of respondents into the user group went on at the same time, it is possible that the link between the questionnaire and the SDI Investigation may have become apparent, but it is not considered likely that this would have affected the sample seriously.

The questionnaire contained 22 questions, the first six of which were intended to discover the characteristics of the respondent e.g. information on his age, qualifications, status, type of research done, etc. The next seven questions (Nos 7-11) were intended to discover something of the respondent's attitude to published information e.g. whether he thought published information important to him, whether he considered he was adequately informed, and what problems he encountered in keeping abreast of information.

The last series of questions (Nos 12-21) were concerned with the respondent's use of libraries, technical and scientific periodicals, and abstracting and indexing services, and the amount of time spent in information gathering.

A few of the questions were open-ended. The coding categories for most of these are shown in the results in Appendix 12C. However the categories for questions 3 and 4 are given in Figure 1 below.

Figure 1. Coding of open-ended questions

Question No. 3 Position held by respondent

Category 1. Section Engineer; Team Member; Design & Development Engineer; Physicist; Application Engineer: Research Engineer: Research Physicist; Systems Engineer.

Category 2. Principal Scientific Staff; Senior Scientist; Senior Engineer; Senior Physicist; Senior Test Engineer.

Category 3. Leading Scientific Staff; Group Leaders; Section Leaders; Leading Staff; Project Leader; Team Leader; Section Head.

Category 4. Department Head; Chief Engineer; Assistant Chief Engineer; Director; Chief Physicist; Chief Scientist; Chief Designer; Manager; Consultant: Advisory.

Question No. 4 Subject of research

1. Microwave theory and techniques including microwave tubes and microwave semiconductor devices.

2. Quantum electronics, quantum optics, lasers, laser applications.

3. Semiconductors and microelectronics.

4. Radar systems and equipment.

5. Telecommmunications, radio and television.

6. Antennas and propagation, ionosphere, troposphere.

7. Plasmas, gas discharges.

8. Electron optics, electron tubes, neutron tubes.

9. Computers, data processing, pattern recognition.

10. Control theory and systems.

11. Solid state materials and phenomena (excluding semiconductors).

12. Miscellaneous (environmental engineering and testing, weapons systems etc.)

13. Not stated by respondent.

Results

The original number of people in the user and control groups who returned the first Questionnaire was approximately 1200 comprising roughly 600 in each group.

When the questionnaire was repeated some two to two-and-a half years later only a proportion of the 1200 sent in replies. In the case of the users, questionnaires were sent to the 450 or so who were still actively participating and from these 319 replies were received.

In the case of the controls, questionnaire were sent to all who had replied originally and 280 replies were received.

Since, owing to pressure of work, no follow-up letter was sent to chase non-replies, the percentage return was good, particularly for the controls since there had been no contact with them for well over two years.

Thus a total of 599 people replied to both questionnaires 319 users and 280 controls.

The summarized results for the first questionnaire are shown in Appendix 12C and for the second questionnaire in Appendix 12D. The answers to each question are tabulated for the sample as a whole, for the control group and the user group, and for the university, government and industry sub-groups of each.

Detailed analysis of the questionnaire returns are the subject of a separate study. The tabulated data given in the Appendices are as follows:-

Information Use Questionnaire - Content of Tables

Table No. 1 Composition of sample of users and controls by age.

2 Composition of sample by qualifications.

3 Composition of sample by position or status

4 Composition of sample by research role.

5 Composition of sample by subject of research - for coding see Figure 1 above.

6 Composition of sample by type of research.

7 Views of sample on the importance of keeping abreast of new published work.

8 Views of sample on whether they manage to keep abreast of published work.

9 Difficulty experienced by sample in discovering relevant articles.

10 Difficulty in obtaining material.

11 Difficulty in finding time to read material

12 What attempt is made by users to carry out a literature search.

13 How confident are members of the sample that they do keep informed.

14 Types of library used by the sample

15 Frequency of use of the library service.

16 Location of the library used.

17 Number of periodicals used regularly by the sample.

18 Technical periodicals considered most important

19 Abstracts journals used.

20 Time spent scanning or reading technical information.

21 Time spent reading and assimilating technical information.

COMPOSITION OF SAMPLE OF USERS AND CONTROLS BY AGE

TABLE AGE

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 1
QUESTION 1

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
UNDER 25	57 .	21	13	1	7	36	25	5	6
	10 .	7	12	1	9	11	25	5	6
25-30	106 .	48	18	15	15	58	22	17	19
	18 .	17	16	17	18	18	22	15	18
31-40	239 .	111	48	30	33	128	35	42	51
	40 .	40	43	35	40	40	34	38	48
41-50	157 .	76	26	31	19	81	17	37	27
	26 .	27	23	36	23	25	17	34	25
OVER 50	39 .	24	7	9	8	15	2	9	4
	7 .	9	6	10	10	5	2	8	4
NOT STATED	1 .	0	0	0	0	1	1	0	0
	* .	0	0	0	0	*	1	0	0

COMPOSITION OF SAMPLE BY QUALIFICATIONS

TABLE QUALIFICATIONS

TABLE NO. 2
QUESTION 2

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
HIGHER DEGREE	205	96	69	17	10	109	59	23	27
	34	34	62	20	12	34	58	21	25
FIRST DEGREE	247	122	33	41	48	125	34	38	53
	41	44	29	48	59	39	33	35	50
HNC/HND	59	20	0	12	8	39	0	23	16
	10	7	0	14	10	12	0	21	15
OTHERS	82	41	9	16	16	41	8	22	11
	14	15	8	19	20	13	8	20	10
NOT STATED	6	1	1	0	0	5	1	4	0
	1	*	1	0	0	2	1	4	0

COMPOSITION OF SAMPLE BY POSITION OR STATUS

TABLE POSITION

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 2

QUESTION 2

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
CATEGORY (1)	262 .	121	72	27	22	141	75	40	26
	44 .	43	64	31	27	44	74	36	24
CATEGORY (2)	127 .	50	4	25	21	77	3	46	28
	21 .	18	4	29	26	24	3	42	26
CATEGORY (3)	166 .	85	24	30	31	81	11	24	46
	28 .	30	21	35	38	25	11	22	43
CATEGORY (4)	41 .	24	12	4	8	17	13	0	4
	7 .	9	11	5	10	5	13	0	4
NOT STATED	3 .	0	0	0	0	3	0	0	3
	1 .	0	0	0	0	1	0	0	3

COMPOSITION OF SAMPLE BY RESEARCH ROLE

TABLE RESEARCH ROLE

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 3

QUESTION 3

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIV-ERSITY	CONTROL GROUP GOVER-NMENT	CONTROL GROUP INDU-STRY	USER GROUP TOTAL	USER GROUP UNIV-ERSITY	USER GROUP GOVER-NMENT	USER GROUP INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
IN CHARGE OF RESEARCH WORKERS	274 •	130	52	40	38	144	49	42	53
	46 •	46	46	47	46	45	48	38	50
MEMBER OF RESEARCH TEAM	183 •	83	14	43	26	100	14	52	34
	31 •	30	13	50	32	31	14	47	32
INDIV. RESEARCH WORKER	157 •	76	56	6	14	81	46	22	13
	26 •	27	50	7	17	25	45	20	12
OTHERS	46 •	20	2	7	11	26	5	8	13
	8 •	7	2	8	13	8	5	7	12
NOT STATED	3 •	1	1	0	0	2	1	1	0
	1 •	*	1	0	0	1	1	1	0

FOR CODING SEE FIGURE 1 ABOVE

TABLE SUBJECT OF RESEARCH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE 5
QUESTION 5

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
(1) MICROWAVE	42	16	6	3	7	26	9	5	12
	7	6	5	3	9	8	9	5	11
(2) LASERS	40	13	6	4	3	27	11	8	8
	7	5	5	5	4	8	11	7	7
(3) SEMICONDUCTOR	125	47	16	15	16	78	32	21	25
	21	17	14	17	20	24	31	19	23
(4) RADAR	26	12	1	5	6	14	1	5	8
	4	4	1	6	7	4	1	5	7
(5) COMMUNICATIONS	62	28	3	14	11	34	4	12	18
	10	10	3	16	13	11	4	11	17
(6) AERIALS	26	8	1	7	0	18	5	10	3
	4	3	1	8	0	6	5	9	3
(7) GAS DISCHARGES	22	11	6	0	5	11	6	1	4
	4	4	5	0	6	3	6	1	4
(8) TUBES	23	5	1	2	2	18	0	9	9
	4	2	1	2	2	6	0	8	8
(9) DATA PROCESSING	23	10	0	5	5	13	6	3	4
	4	4	0	6	6	4	6	3	4

CLASSIFICATION OF ARTICLE BY SUBJECT OF RESEARCH - FOR CODING SEE FIGURE 1 ABOVE

TABLE 5
QUESTION 5
(continued)

TABLE SUBJECT OF RESEARCH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
(10) ELECTRICAL POWER	17 .	12	8	0	4	5	0	3	2
	3 .	4	7	0	5	2	0	3	2
(11) CONTROL	17 .	11	4	2	5	6	4	1	1
	3 .	4	4	2	6	2	4	1	1
(12) MAGNETIC	19 .	10	2	2	6	9	2	3	4
	3 .	4	2	2	7	3	2	3	4
(13) ENVIRONMENTAL	15 .	8	1	2	5	7	1	4	2
	3 .	3	1	2	6	2	1	4	2
NOT STATED	169 .	98	59	27	12	71	27	31	13
	28 .	35	53	31	15	22	26	28	12

COMPOSITION OF SAMPLE BY TYPE OF RESEARCH

TABLE TYPE OF RESEARCH TO WHICH MOST TIME IS DEVOTED — TABLE NO. 6

ANALYSED BY CATEGORY OF RESEARCH WORKER — QUESTION 6

BASE ALL INFORMANTS — RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
PURE	78	49	38	10	1	29	27	2	0
	13	17	34	12	1	9	26	2	0
EXPLORATORY	145	65	33	20	12	80	37	29	14
	24	23	29	23	15	25	36	26	13
APPLIED	264	120	26	40	54	144	19	53	72
	44	43	23	47	66	45	19	48	67
OTHER	93	30	0	15	15	63	19	23	21
	16	11	0	17	18	20	19	21	20
NOT STATED	19	16	15	1	0	3	0	3	0
	3	6	13	1	0	1	0	3	0

VIEWS OF SAMPLE ON THE IMPORTANCE OF KEEPING ABREAST OF PUBLISHED WORK

TABLE IMPORTANCE OF KEEPING ABREAST OF NEW WORK PUBLISHED IN YOUR FIELD

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 7

QUESTION 7

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
ESSENTIAL	456	206	95	65	46	250	81	91	78
	76	74	85	76	56	78	79	83	73
VALUABLE	135	69	14	19	36	66	19	19	28
	23	25	13	22	44	21	19	17	26
OF MINOR IMPORTANCE	3	1	1	0	0	2	1	0	1
	1	*	1	0	0	1	1	0	1
NOT STATED	6	4	2	2	0	2	1	0	1
	1	1	2	2	0	1	1	0	1

TABLE SATISFACTION WITH INFORMATION ON NEW WORK IN YOUR FIELD PUBLISHED IN THE ENGLISH LANGUAGE

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 8

QUESTION 8

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
SATISFIED	449	208	87	62	59	241	81	84	76
	75	74	78	72	72	76	79	76	71
DISSATISFIED	138	67	23	21	23	71	19	25	27
	23	24	21	24	28	22	19	23	25
NOT STATED	12	5	2	3	0	7	2	1	4
	2	2	2	3	0	2	2	1	4

DIFFICULTY EXPERIENCED BY SAMPLE IN DISCOVERING RELEVANT ARTICLES

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN FINDING OUT WHICH SPECIFIC, NEWLY-PUBLISHED ITEMS IN THE ENGLISH LANGUAGE ARE RELEVANT TO YOUR INTERESTS

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 9

QUESTION 9*A

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
NO DIFFICULTY	136	65	23	26	16	71	26	22	23
	23	23	21	30	20	22	25	20	21
NOT VERY DIFFICULT	201	88	42	23	23	113	34	46	33
	34	31	38	27	28	35	33	42	31
QUITE DIFFICULT	163	81	35	21	25	82	24	28	30
	27	29	31	24	30	26	24	25	28
VERY DIFFICULT	74	35	10	13	12	39	12	12	15
	12	13	9	15	15	12	12	11	14
GREAT DIFFICULTY	23	9	2	2	5	14	6	2	6
AVERAGE	2.4	2.4	2.3	2.3	2.5	2.4	2.3	2.3	2.4
STANDARD DEVIATION	1.0	1.0	0.9	1.1	1.1	1.0	1.1	0.9	1.1
STANDARD ERROR	0.030	0.044	0.063	0.085	0.086	0.041	0.077	0.064	0.075
NOT STATED	2	2	0	1	1	0	0	0	0
	*	1	0	1	1	0	0	0	0

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN OBTAINING MATERIAL (EITHER TO SCAN FOR RELEVANT ITEMS OR TO READ AND ASSIMILATE) PUBLISHED IN ENGLISH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO.10

QUESTION 9*B

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
1	259 .	114	38	45	31	145	33	55	57
	43 .	41	34	52	38	45	32	50	53
2	204 .	101	39	28	34	103	40	33	30
	34 .	36	35	33	41	32	39	30	28
3	95 .	41	22	7	12	54	21	18	15
	16 .	15	20	8	15	17	21	16	14
4	31 .	18	11	3	4	13	6	3	4
	5 .	6	10	3	5	4	6	3	4
5	9 .	5	2	2	1	4	2	1	1
AVERAGE	1.9 .	1.9	2.1	1.7	1.9	1.8	2.0	1.7	1.7
STANDARD DEVIATION	0.9 .	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9
STANDARD ERROR	0.027 .	0.040	0.068	0.067	0.069	0.036	0.065	0.058	0.060
6	1 .	1	0	1	0	0	0	0	0
	* .	*	0	1	0	0	0	0	0

DIFFICULTY IN FINDING TIME TO READ MATERIAL

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN FINDING TIME TO READ AND ASSIMILATE THE MATERIAL WHEN OBTAINED

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 11

QUESTION 11*C

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
1	13	8	5	1	2	5	4	1	0
	2	3	4	1	2	2	4	1	0
2	47	23	10	6	7	24	7	11	6
	8	8	9	7	9	8	7	10	6
3	155	59	26	17	16	96	27	35	34
	26	21	23	20	20	30	26	32	32
4	197	95	32	37	26	102	35	32	35
	33	34	29	43	32	32	34	29	33
5	185	94	39	24	31	91	29	30	32
AVERAGE	3.6	3.6	3.6	3.7	3.7	3.6	3.6	3.5	3.7
STANDARD DEVIATION	1.0	1.0	1.1	0.9	1.0	0.9	1.0	0.9	0.8
STANDARD ERROR	0.031	0.047	0.081	0.073	0.090	0.040	0.078	0.068	0.062
6	2	1	0	1	0	1	0	1	0
	*	*	0	1	0	*	0	1	0

WHAT ATTEMPT IS MADE BY USERS TO CARRY OUT A LITERATURE SEARCH

TABLE WHETHER ATTEMPT MADE TO DISCOVER WHAT INFORMATION HAS BEEN PUBLISHED WHICH WOULD BE RELEVANT WHEN FACED WITH A NEW PROBLEM OR PROJECT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 12

QUESTION 10

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
ATTEMPT MADE	559 .	259	102	81	76	300	98	105	97
	93 .	92	91	94	93	94	96	95	91
NO ATTEMPT MADE									
TOO DIFFICULT	16 .	10	4	2	4	6	1	2	3
	3 .	4	4	2	5	2	1	2	3
NOT NECESSARY	3 .	3	3	0	0	0	0	0	0
	1 .	1	3	0	0	0	0	0	0
OTHER REASONS	17 .	8	4	2	2	9	2	1	6
	3 .	3	4	2	2	3	2	1	6
NOT STATED	1 .	1	1	0	0	0	0	0	0
	* .	*	1	0	0	0	0	0	0
NOT STATED	7 .	3	2	1	0	4	1	2	1
	1 .	1	2	1	0	1	1	2	1

HOW CONFIDENT ARE MEMBERS OF THE SAMPLE THAT THEY DO KEEP INFORMED

TABLE . WHETHER CONSIDERS THAT ARTICLES OF PERSONAL VALUE APPEAR IN PERIODICALS OTHER THAN THOSE WHICH ARE SEEN REGULARLY

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 13
QUESTION 11
RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
NONE	62	31	11	11	9	31	10	10	11
	10	11	10	13	11	10	10	9	10
A LARGE NUMBER	45	27	13	9	5	18	5	5	8
	8	10	12	10	6	6	5	5	7
A MODERATE NUMBER	278	130	56	34	40	148	48	55	45
	46	46	50	40	49	46	47	50	42
A SMALL NUMBER	198	82	27	31	24	116	37	38	41
	33	29	24	36	29	36	36	35	38
NOT STATED HOW MANY	7	3	0	1	2	4	1	2	1
	1	1	0	1	2	1	1	2	1
NOT STATED	11	8	6	0	2	3	1	0	2
	2	3	5	0	2	1	1	0	2

TYPES OF LIBRARY USED BY THE SAMPLE

TABLE LIBRARY FACILITIES USED MOST

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 14

QUESTION 12

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
THE MAIN LIBRARY OF THE ORGANISATION	465	212	66	74	72	253	68	92	93
	78	76	59	86	88	79	67	84	87
A DEPARTMENTAL OR SECTION LIBRARY	111	49	29	12	8	62	36	15	11
	19	17	26	14	10	19	35	14	10
AN EXTERNAL LIBRARY	15	10	7	0	3	5	3	0	2
	3	4	6	0	4	2	3	0	2
NOT STATED	14	10	10	0	0	4	0	3	1
	2	4	9	0	0	1	0	3	1

FREQUENCY OF USE OF THE LIBRARY SERVICE

TABLE FREQUENCY OF USING THE LIBRARY USED MOST

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 15

QUESTION 13

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP				USER GROUP			
		TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
1-3 TIMES PER MONTH	100	46	9	18	19	54	12	27	15
	17	16	8	21	23	17	12	25	14
4-8 TIMES	252	124	54	35	35	128	40	39	49
	42	44	48	41	43	40	39	35	46
9-12 TIMES	147	64	31	15	18	83	24	29	30
	25	23	28	17	22	26	24	26	28
MORE OFTEN	100	46	18	18	10	54	26	15	13
	17	16	16	21	12	17	25	14	12

LOCATION OF THE LIBRARY USED

TABLE LOCATION OF THE LIBRARY USED MOST

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 16

QUESTION 14

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
SAME BUILDING -									
SAME FLOOR	81 .	40	12	10	18	41	4	10	27
	14 .	14	11	12	22	13	4	9	25
DIFFERENT FLOOR	153 .	68	43	7	18	85	41	13	31
	26 .	24	38	8	22	27	40	12	29
DIFFERENT BUILDING -									
CONVENIENT	292 .	133	49	47	37	159	53	64	42
	49 .	47	44	55	45	50	52	58	39
INCONVENIENT	68 .	37	6	22	9	31	6	21	4
	11 .	13	5	26	11	10	6	19	4
NOT STATED	7 .	2	2	0	0	5	0	2	3
	1 .	1	2	0	0	2	0	2	3

NUMBER OF PERIODICALS USED REGULARLY BY THE SAMPLE

TABLE NUMBER OF TECHNICAL PERIODICALS SEEN OR SCANNED REGULARLY

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 17

QUESTION 15

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
0-4	129	62	24	20	18	67	19	30	18
	22	22	21	23	22	21	19	27	17
5-8	150	75	32	24	19	75	23	26	26
	25	27	29	28	23	24	23	24	24
9-16	162	74	30	22	22	88	32	24	32
	27	26	27	26	27	28	31	22	30
17 OR MORE	69	26	7	6	13	43	13	11	19
	12	9	6	7	16	13	13	10	18
NOT STATED	89	43	19	14	10	46	15	19	12
	15	15	17	16	12	14	15	17	11

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 18A

QUESTION 15
RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	*********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
ELECTRONICS	125	60	13	20	27	65	8	24	33
J APPL PHYS	154	61	23	15	23	93	42	24	27
PROC IEEE	177	72	34	21	17	105	30	34	41
PROC IEE	156	70	32	22	16	86	30	31	25
BRIT J APPL PHYS	82	44	22	5	17	38	16	8	14
IEEE TRANS ELEC DEVIC	35	13	5	1	7	22	6	5	11
DESIGN ELECTRONICS	54	25	1	6	18	29	0	11	18
ELECTRONIC ENGINEERING	129	65	25	19	21	64	11	30	23
BELL SYST J	61	28	5	13	10	33	2	16	15
IEEE TRANS (UNSPEC)	72	36	15	10	11	36	17	8	11
MICROWAVE J	58	18	5	8	5	40	6	15	19
ELECTRONIC DESIGN	41	18	1	11	6	23	4	6	13
J SCI INSTRUM	60	32	19	7	6	28	10	13	5
ELECTRONIC LETTERS	73	24	18	4	2	49	23	13	13
REV SCI INSTRUM	66	31	15	9	7	35	13	15	7
SOLID STATE ELECONICS	39	14	6	2	6	25	7	7	11
PHYS REV	79	29	20	4	5	50	35	7	8
VACUUM	23	8	2	1	5	15	2	4	9
J ELECTROCHEM SOC	21	7	1	1	5	14	2	3	9
WIRELESS WORLD	48	26	10	11	5	22	3	14	5
ELECTRONICS WEEKLY	24	16	3	6	7	8	0	4	4
MICROWAVES	32	8	1	4	3	24	4	6	14
APP OTICA	44	19	4	10	5	25	8	12	5
SOLID STATE TECHNOL	9	3	0	0	3	6	2	0	4
APP PHYS LETTERS	46	11	6	3	2	35	16	12	7
CONTROL	32	18	7	4	7	14	4	6	4
ELECTRONIC EQUIP NEWS	21	11	0	8	3	10	1	4	5
J OPT SOC AMER	29	14	3	8	3	15	5	4	6
MICROELECTRONICS	4	1	0	0	1	3	1	1	1
J PHYS CHEM SOLIDS	18	7	4	0	3	11	6	2	3
IEE TRANS MTT	29	6	4	0	2	23	5	6	12
DIRECT CURRENT	1	1	0	0	1	0	0	0	0
ELECTRONIC COMP	27	14	2	7	5	13	0	8	5

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 18A
QUESTION 15
(continued)
RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
ELECT REV	3	1	0	0	1	2	0	0	2
INT J ELECTRONICS	11	8	2	4	2	3	1	0	2
IEEE SPECTRUM	11	4	2	2	0	7	4	1	2
IEEE TRANS COMPUTERS	8	1	1	0	0	7	2	2	3
IEEE TRANS AP	16	5	3	1	1	11	4	5	2
IEEE J QUANTUM ELECTONIC	16	4	1	0	3	12	6	4	2
J AMER CERAM SOC	8	7	1	3	3	1	1	0	0
PRODUCT ENGNG	3	2	0	1	1	1	0	0	1
RADIO & ELEC ENGNG	13	2	0	2	0	11	5	0	6
SOVIET PHYS TECH PHYS	14	9	4	3	2	5	3	0	2
COMPUTER WEEKLY	6	3	0	1	2	3	1	1	1
OTHERS	488	238	100	75	63	250	81	94	75

TABLE: TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY: CATEGORY OF RESEARCH WORKER

BASE: ALL INFORMANTS

TABLE NO.18B
QUESTION 15

COLUMN PERCENTAGES

RESPONSES	TOTAL	CONTROL GROUP				USER GROUP			
		TOTAL	UNIVERSITY	GOVERNMENT	INDUSTRY	TOTAL	UNIVERSITY	GOVERNMENT	INDUSTRY
	599	280	112	86	82	319	102	110	107
ELECTRONICS	21	21	12	23	33	20	8	22	31
J APPL PHYS	26	22	21	17	28	29	41	22	25
PROC IEEE	30	26	30	24	21	33	29	31	38
PROC IEE	26	25	29	26	20	27	29	28	23
BRIT J APPL PHYS	14	16	20	6	21	12	16	7	13
IEEE TRANS ELEC DEVIC	6	5	4	1	9	7	6	5	10
DESIGN ELECTRONICS	9	9	1	7	22	9	0	10	17
ELECTRONIC ENGINEERING	22	23	22	22	26	20	11	27	21
BELL SYST J	10	10	4	15	12	10	2	15	14
IEEE TRANS (UNSPEC)	12	13	13	12	13	11	17	7	10
MICROWAVE J	10	6	4	9	6	13	6	14	18
ELECTRONIC DESIGN	7	6	1	13	7	7	4	5	12
J SCI INSTRUM	10	11	17	8	7	9	10	12	5
ELECTRONIC LETTERS	12	9	16	5	2	15	23	12	12
REV SCI INSTRUM	11	11	13	10	9	11	13	14	7
SOLID STATE ELECONICS	7	5	5	2	7	8	7	6	10
PHYS REV	13	10	18	5	6	16	34	6	7
VACUUM	4	3	2	1	6	5	2	4	8
J ELECTROCHEM SOC	4	2	1	1	6	4	2	3	8
WIRELESS WORLD	8	9	9	13	6	7	3	13	5
ELECTRONICS WEEKLY	4	6	3	7	9	3	0	4	4
MICROWAVES	5	3	1	5	4	8	4	5	13
APP OTICA	7	7	4	12	6	8	8	11	5
SOLID STATE TECHNOL	2	1	0	0	4	2	2	0	4
APP PHYS LETTERS	8	4	5	3	2	11	16	11	7
CONTROL	5	6	6	5	9	4	4	5	4
ELECTRONIC EQUIP NEWS	4	4	0	9	4	3	1	4	5
J OPT SOC AMER	5	5	3	9	4	5	5	4	6
MICROELECTRONICS	1	*	0	0	1	1	1	1	1
J PHYS CHEM SOLIDS	3	2	4	0	4	3	6	2	3
IEE TRANS MTT	5	2	4	0	2	7	5	5	11
DIRECT CURRENT	*	*	0	0	1	0	0	0	0
ELECTRONIC COMP	5	5	2	8	6	4	0	7	5

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO.18B
QUESTION 15
(continued)

COLUMN PERCENTAGES

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
ELECT REV	1 .	*	0	0	1	1	0	0	2
INT J ELECTRONICS	2 .	3	2	5	2	1	1	0	2
IEEE SPECTRUM	2 .	1	2	2	0	2	4	1	2
IEEE TRANS COMPUTERS	1 .	*	1	0	0	2	2	2	3
IEEE TRANS [illegible]	3 .	2	3	1	1	3	4	5	2
IEEE J QUANTUM ELECTONIC	3 .	1	1	0	4	4	6	4	2
J AMER CERAM SOC	1 .	2	1	3	4	*	1	0	0
PRODUCT ENGNG	1 .	1	0	1	1	*	0	0	1
RADIO & ELEC ENGNG	2 .	1	0	2	0	3	5	0	6
SOVIET PHYS TECH PHYS	2 .	3	4	3	2	2	3	0	2
COMPUTER WEEKLY	1 .	1	0	1	2	1	1	1	1
OTHERS	81 .	85	89	87	77	78	79	85	70

ABSTRACTS JOURNALS USED

TABLE ABSTRACT JOURNALS AND LISTS OF TITLES USED REGULARLY

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 19B

QUESTION 16

COLUMN PERCENTAGES

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
OWN ORGANISATION	57	51	19	81	65	61	23	90	68
BRITISH TECH INDEX	1	0	0	0	0	1	1	1	2
CHEMICAL ABSTRACTS	3	3	4	1	4	2	6	1	0
CHEMICAL TITLES	*	0	0	0	0	*	0	1	0
COMPUTER ABSTRACTS	6	7	8	3	11	5	5	5	6
CONTROL ABSTRACTS	4	6	11	2	4	3	3	4	1
CURRENT CONTENTS	8	7	7	7	9	8	8	5	10
CURRENT PAPERS IN ELECTROTECHNOLOGY	20	20	22	19	18	20	12	24	23
6	26	22	28	15	22	29	35	22	29
7	6	6	8	5	4	5	4	9	3
SCIENCE ABSTRACTS-B	29	34	42	27	32	24	31	15	27
ELEC & COMMUNIC ABSTRCTS	10	12	13	10	12	8	3	9	12
ENGINEERING INDEX	5	7	10	1	10	4	4	2	6
INDEX AERONAUTICS	1	1	1	1	0	1	0	1	1
INSTRUMENT ABSTRACTS	2	2	1	1	5	1	0	1	2
NASA SCI & TECHNICAL AEROSPACE REPORTS	9	11	8	21	5	7	5	9	6
NUCLEAR SCI ABSTRACTS	2	2	3	2	0	3	3	5	1
SCIENCE ABSTRACTS-A	24	25	38	16	16	23	40	13	16
SOLID STATE ABSTRACTS	9	7	10	3	7	10	8	11	10
US GOVT RESEARCH & DEVELOPMENT REPORTS	15	15	5	22	20	14	6	21	16
OTHERS	12	10	12	13	6	13	17	11	12
NOT STATED	7	7	10	5	7	6	13	1	5

ABSTRACTS JOURNALS USED

TABLE NO.19

TABLE ABSTRACT JOURNALS AND LISTS OF TITLES USED REGULARLY

ANALYSED BY CATEGORY OF RESEARCH WORKER

QUESTION 16

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
OWN ORGANISATION	339	144	21	70	53	195	23	99	73
BRITISH TECH INDEX	4	0	0	0	0	4	1	1	2
CHEMICAL ABSTRACTS	15	8	4	1	3	7	6	1	0
CHEMICAL TITLES	1	0	0	0	0	1	0	1	0
COMPUTER ABSTRACTS	37	21	9	3	9	16	5	5	6
CONTROL ABSTRACTS	25	17	12	2	3	8	3	4	1
CURRENT CONTENTS	45	21	8	6	7	24	8	5	11
CURRENT PAPERS IN ELECTROTECHNOLOGY	119	56	25	16	15	63	12	26	25
6	153	62	31	13	18	91	36	24	31
7	33	16	9	4	3	17	4	10	3
SCIENCE ABSTRACTS-B	174	96	47	23	26	78	32	17	29
ELEC & COMMUNIC ABSTRCTS	60	34	15	9	10	26	3	10	13
ENGINEERING INDEX	32	20	11	1	8	12	4	2	6
INDEX AERONAUTICS	4	2	1	1	0	2	0	1	1
INSTRUMENT ABSTRACTS	9	6	1	1	4	3	0	1	2
NASA SCI & TECHNICAL AEROSPACE REPORTS	52	31	9	18	4	21	5	10	6
NUCLEAR SCI ABSTRACTS	14	5	3	2	0	9	3	5	1
SCIENCE ABSTRACTS-A	141	69	42	14	13	72	41	14	17
SOLID STATE ABSTRACTS	51	20	11	3	6	31	8	12	11
US GOVT RESEARCH & DEVELOPMENT REPORTS	87	41	6	19	16	46	6	23	17
OTHERS	71	29	13	11	5	42	17	12	13
NOT STATED	40	21	11	4	6	19	13	1	5

TIME SPENT SCANNING OR READING TECHNICAL INFORMATION

TABLE NUMBER OF HOURS PER WEEK SPENT SCANNING OR READING PUBLISHED TECHNICAL INFORMATION

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 20

QUESTION 17

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
LESS THAN 2.5 HOURS	89	40	13	8	19	49	19	13	17
	15	14	12	9	23	15	19	12	16
2.5-4 HOURS	129	60	28	14	18	69	13	31	25
	22	21	25	16	22	22	13	28	23
4-7 HOURS	202	97	40	33	24	105	38	30	37
	34	35	36	38	29	33	37	27	35
8 HOURS OR MORE	171	79	28	31	20	92	30	36	26
	29	28	25	36	24	29	29	33	24
NOT STATED	8	4	3	0	1	4	2	0	2
	1	1	3	0	1	1	2	0	2

TIME SPENT READING AND ASSIMILATING TECHNICAL INFORMATION

TABLE NUMBER OF HOURS PER WEEK SPENT READING AND ASSIMILATING (AS DISTINCT FROM SCANNING) PUBLISHED TECHNICAL INFORMATION

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 21

QUESTION 18

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
LESS THAN 2.5 HOURS	269 .	124	43	35	46	145	40	54	51
	45 .	44	38	41	56	45	39	49	48
2.5-4 HOURS	136 .	61	32	20	9	75	14	32	29
	23 .	22	29	23	11	24	14	29	27
4-7 HOURS	129 .	67	25	21	21	62	26	18	18
	22 .	24	22	24	26	19	25	16	17
8 HOURS OR MORE	53 .	21	8	9	4	32	20	6	6
	9 .	7	7	10	5	10	20	5	6
NOT STATED	12 .	7	4	1	2	5	2	0	3
	2 .	2	4	1	2	2	2	0	3

COMPOSITION OF SAMPLE OF USERS AND CONTROLS BY AGE

TABLE AGE

TABLE NO. 1

ANALYSED BY CATEGORY OF RESEARCH WORKER

QUESTION 1

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
UNDER 25	12	4	1	1	2	8	7	1	0
	2	1	1	1	2	3	7	1	0
25-30	108	45	22	7	16	63	31	14	18
	18	16	20	8	20	20	30	13	17
31-40	232	109	46	31	32	123	38	39	46
	39	39	41	36	39	39	37	35	43
41-50	191	91	34	33	24	100	22	40	38
	32	32	30	38	29	31	22	36	36
OVER 50	56	31	9	14	8	25	4	16	5
	9	11	8	16	10	8	4	15	5

COMPOSITION OF SAMPLE BY QUALIFICATIONS

TABLE QUALIFICATIONS

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 2
QUESTION 2

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
HIGHER DEGREE	231 .	105	76	18	11	126	71	26	29
	39 .	38	68	21	13	39	70	24	27
FIRST DEGREE	232 .	118	30	42	46	114	26	35	53
	39 .	42	27	49	56	36	25	32	50
HNC/HND	64 .	22	0	12	10	42	0	25	17
	11 .	8	0	14	12	13	0	23	16
OTHERS	68 .	35	6	14	15	33	5	20	8
	11 .	13	5	16	18	10	5	18	7
NOT STATED	4 .	0	0	0	0	4	0	4	0
	1 .	0	0	0	0	1	0	4	0

COMPOSITION OF SAMPLE BY POSITION OR STATUS

TABLE POSITION

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 3
QUESTION 3

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
CATEGORY (1)	209	96	58	22	16	113	61	34	18
	35	34	52	26	20	35	60	31	17
CATEGORY (2)	125	51	7	25	19	74	5	45	24
	21	18	6	29	23	23	5	41	22
CATEGORY (3)	196	95	31	32	32	101	16	30	55
	33	34	28	37	39	32	16	27	51
CATEGORY (4)	64	36	16	5	15	28	19	1	8
	11	13	14	6	18	9	19	1	7
NOT STATED	6	2	0	2	0	4	2	0	2
	1	1	0	2	0	1	2	0	2

COMPOSITION OF SAMPLE BY RESEARCH ROLE

TABLE RESEARCH ROLE

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 4
QUESTION 4

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
IN CHARGE OF RESEARCH WORKERS	311	142	57	44	41	169	56	49	64
	52	51	51	51	50	53	55	45	60
MEMBER OF RESEARCH TEAM	156	64	15	30	19	92	29	41	22
	26	23	13	35	23	29	28	37	21
INDIV. RESEARCH WORKER	141	77	53	12	12	64	39	18	7
	24	27	47	14	15	20	38	16	7
OTHERS	69	30	5	11	14	39	5	14	20
	12	11	4	13	17	12	5	13	19
NOT STATED	9	6	1	2	3	3	0	3	0
	2	2	1	2	4	1	0	3	0

COMPOSITTON OF SAMPLE BY SUBJECT OF RESEARCH FOR CODING SEE FIGURE 1 ABOVE

TABLE SUBJECT OF RESEARCH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE No.5

QUESTION No.5

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
(1) MICROWAVE	44	17	5	6	6	27	11	6	10
	7	6	4	7	7	8	11	5	9
(2) LASERS	33	14	8	1	5	19	7	7	5
	6	5	7	1	6	6	7	6	5
(3) SEMICONDUCTOR	132	59	15	20	24	73	32	17	24
	22	21	13	23	29	23	31	15	22
(4) RADAR	30	10	1	6	3	20	1	6	13
	5	4	1	7	4	6	1	5	12
(5) COMMUNICATIONS	62	24	5	7	12	38	5	15	18
	10	9	4	8	15	12	5	14	17
(6) AERIALS	24	7	1	5	1	17	6	8	3
	4	2	1	6	1	5	6	7	3
(7) GAS DISCHARGES	22	12	6	0	6	10	5	1	4
	4	4	5	0	7	3	5	1	4
(8) TUBES	27	7	0	0	7	20	0	10	10
	5	2	0	0	9	6	0	9	9
(9) DATA PROCESSING	25	4	0	3	1	21	8	7	6
	4	1	0	3	1	7	8	6	6

COMPOSITION OF SAMPLE BY SUBJECT OF RESEARCH FOR CODING SEE FIGURE 1 ABOVE

TABLE SUBJECT OF RESEARCH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE No.5
QUESTION No.5
(continued)
RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
(10) ELECTRICAL POWER	14 .	7	5	0	2	7	0	4	3
	2 .	2	4	0	2	2	0	4	3
(11) CONTROL	15 .	10	2	3	5	5	3	2	0
	3 .	4	2	3	6	2	3	2	0
(12) MAGNETIC	18 .	7	2	1	4	11	5	3	3
	3 .	2	2	1	5	3	5	3	3
(13) ENVIRONMENTAL	18 .	12	2	6	4	6	3	1	2
	3 .	4	2	7	5	2	3	1	2
NOT STATED	168 .	104	61	33	10	64	25	27	12
	28 .	37	54	38	12	20	25	25	11

COMPOSITION OF SAMPLE BY TYPE OF RESEARCH

TABLE TYPE OF RESEARCH TO WHICH MOST TIME IS DEVOTED

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 6
QUESTION 6

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
PURE	74	44	36	8	0	30	25	4	1
	12	16	32	9	0	9	25	4	1
EXPLORATORY	147	64	33	21	10	83	43	27	13
	25	23	29	24	12	26	42	25	12
APPLIED	279	135	28	45	62	144	18	52	74
	47	48	25	52	76	45	18	47	69
OTHER	75	18	0	9	9	57	14	25	18
	13	6	0	10	11	18	14	23	17
NOT STATED	24	19	15	3	1	5	2	2	1
	4	7	13	3	1	2	2	2	1

VIEWS OF SAMPLE ON THE IMPORTANT OF KEEPING ABREAST OF NEW PUBLISHED WORK

TABLE IMPORTANCE OF KEEPING ABREAST OF NEW WORK PUBLISHED IN YOUR FIELD

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

Table NO. 7
QUESTION 7

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
ESSENTIAL	429	192	89	62	41	237	79	82	76
	72	69	79	72	50	74	77	75	71
VALUABLE	155	79	20	22	37	76	21	27	28
	26	28	18	26	45	24	21	25	26
OF MINOR IMPORTANCE	5	3	0	2	1	2	0	0	2
	1	1	0	2	1	1	0	0	2
NOT STATED	10	6	3	0	3	4	2	1	1
	2	2	3	0	4	1	2	1	1

FILMED FROM BEST AVAILABLE COPY

VIEWS OF SAMPLE ON WHETHER THEY MANAGE TO KEEP ABREAST OF PUBLISHED WORK

TABLE SATISFACTION WITH INFORMATION ON NEW WORK IN YOUR FIELD PUBLISHED IN THE ENGLISH LANGUAGE

ANALYSED BY CATEGORY OF RESEARCH WORKER

TABLE NO. 8
QUESTION 8

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
SATISFIED	483	212	89	67	56	271	87	91	93
	81	76	79	78	68	85	85	83	87
DISSATISFIED	96	55	20	14	21	41	14	15	12
	16	20	18	16	26	13	14	14	11
NOT STATED	20	13	3	5	5	7	1	4	2
	3	5	3	6	6	2	1	4	2

DIFFICULTY EXPERIENCED BY SAMPLE IN DISCOVERING RELEVANT ARTICLES

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN FINDING OUT WHICH SPECIFIC, NEWLY-PUBLISHED ITEMS IN THE ENGLISH LANGUAGE ARE RELEVANT TO YOUR INTERESTS

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 9
QUESTION 9*A

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
NO DIFFICULTY	127	71	28	29	14	56	21	15	20
	21	25	25	34	17	18	21	14	19
NOT VERY DIFFICULT	233	85	32	31	22	148	38	60	50
	39	30	29	36	27	46	37	55	47
QUITE DIFFICULT	153	79	38	16	25	74	27	21	26
	26	28	34	19	30	23	26	19	24
VERY DIFFICULT	61	32	10	8	14	29	14	9	6
	10	11	9	9	17	9	14	8	6
GREAT DIFFICULTY	22	11	4	2	5	11	2	4	5
AVERAGE	2.3	2.3	2.3	2.1	2.6	2.3	2.4	2.3	2.2
STANDARD DEVIATION	1.0	1.0	1.0	1.0	1.1	0.9	1.0	0.9	0.9
STANDARD ERROR	0.029	0.045	0.068	0.077	0.087	0.037	0.070	0.060	0.063
NOT STATED	3	2	0	0	2	1	0	1	0
	1	1	0	0	2	*	0	1	0

DIFFICULTY IN OBTAINING MATERIAL

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN OBTAINING MATERIAL (EITHER TO SCAN FOR RELEVANT ITEMS OR TO READ AND ASSIMILATE) PUBLISHED IN ENGLISH

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 10
QUESTION 9*B
RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
1	256	118	50	39	29	138	37	51	50
	43	42	45	45	35	43	36	46	47
2	216	96	32	34	30	120	43	36	41
	36	34	29	40	37	38	42	33	38
3	92	47	22	7	18	45	17	16	12
	15	17	20	8	22	14	17	15	11
4	25	14	6	4	4	11	4	5	2
	4	5	5	5	5	3	4	5	2
5	8	3	2	1	0	5	1	2	2
AVERAGE	1.8	1.9	1.9	1.7	2.0	1.8	1.9	1.8	1.7
STANDARD DEVIATION	0.9	0.9	1.0	0.8	0.9	0.9	0.9	0.9	0.8
STANDARD ERROR	0.026	0.039	0.065	0.065	0.069	0.034	0.060	0.062	0.056
6	2	2	0	1	1	0	0	0	0
	*	1	0	1	1	0	0	0	0

after

DIFFICULTY IN FINDING TIME TO READ MATERIAL

TABLE DEGREE OF DIFFICULTY ENCOUNTERED IN FINDING TIME TO READ AND ASSIMILATE THE MATERIAL WHEN OBTAINED

TABLE NO. 11
QUESTION 9*C

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP********* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
1	14	8	6	0	2	6	3	3	0
	2	3	5	0	2	2	3	3	0
2	46	20	12	4	4	26	7	8	11
	8	7	11	5	5	8	7	7	10
3	131	54	20	19	15	77	22	25	30
	22	19	18	22	18	24	22	23	28
4	199	94	34	33	27	105	29	39	37
	33	34	30	38	33	33	28	35	35
5	208	103	40	30	33	105	41	35	29
AVERAGE	3.7	3.7	3.5	3.8	3.8	3.6	3.7	3.6	3.6
STANDARD DEVIATION	1.0	1.0	1.2	0.8	1.0	1.0	1.1	1.0	0.9
STANDARD ERROR	0.032	0.048	0.085	0.069	0.087	0.042	0.083	0.073	0.066
6	1	1	0	0	1	0	0	0	0
	*	*	0	0	1	0	0	0	0

after

WHAT ATTEMPT IS MADE BY USERS TO CARRY OUT A LITERATURE SEARCH

TABLE WHETHER ATTEMPT MADE TO DISCOVER WHAT INFORMATION HAS BEEN PUBLISHED WHICH WOULD BE RELEVANT WHEN FACED WITH A NEW PROBLEM OR PROJECT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 12
QUESTION 10

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
ATTEMPT MADE	549 .	250	103	79	68	299	97	104	98
	92 .	89	92	92	83	94	95	95	92
NO ATTEMPT MADE									
TOO DIFFICULT	22 .	15	7	1	7	7	0	2	5
	4 .	5	6	1	9	2	0	2	5
NOT NECESSARY	1 .	0	0	0	0	1	1	0	0
	* .	0	0	0	0	*	1	0	0
OTHER REASONS	20 .	11	2	4	5	9	3	2	4
	3 .	4	2	5	6	3	3	2	4
NOT STATED	1 .	0	0	0	0	1	0	1	0
	* .	0	0	0	0	*	0	1	0
NOT STATED	6 .	4	0	2	2	2	1	1	0
	1 .	1	0	2	2	1	1	1	0

HOW CONFIDENT ARE MEMBERS OF THE SAMPLE THAT THEY DO KEEP INFORMED

TABLE WHETHER CONSIDERS THAT ARTICLES OF PERSONAL VALUE APPEAR IN PERIODICALS OTHER THAN THOSE WHICH ARE SEEN REGULARLY

ANALYSED BY CATEGORY OF RESEARCH WORKER

TABLE NO. 13
QUESTION 11

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
NONE	70 •	29	8	10	11	41	12	12	17
	12 •	10	7	12	13	13	12	11	16
A LARGE NUMBER	44 •	25	12	7	6	19	6	9	4
	7 •	9	11	8	7	6	6	8	4
A MODERATE NUMBER	254 •	128	52	35	41	126	46	39	41
	42 •	46	46	41	50	39	45	35	38
A SMALL NUMBER	219 •	90	36	30	24	129	37	50	42
	37 •	32	32	35	29	40	36	45	39
NOT STATED HOW MANY	5 •	2	1	1	0	3	1	0	2
	1 •	1	1	1	0	1	1	0	2
NOT STATED	8 •	6	3	3	0	2	0	0	2
	1 •	2	3	3	0	1	0	0	2

TABLE LIBRARY FACILITIES USED MOST

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 14
QUESTION 12

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
THE MAIN LIBRARY OF THE ORGANISATION -	450	207	70	73	64	243	61	95	87
	75	74	63	85	78	76	60	86	81
A DEPARTMENTAL OR SECTION LIBRARY -	127	58	29	13	16	69	39	12	18
	21	21	26	15	20	22	38	11	17
AN EXTERNAL LIBRARY	16	8	6	0	2	8	6	0	2
	3	3	5	0	2	3	6	0	2
NOT STATED	12	9	7	1	1	3	0	3	0
	2	3	6	1	1	1	0	3	0

FREQUENCY OF USE OF THE LIBRARY SERVICE1

TABLE FREQUENCY OF USING THE LIBRARY USED MOST — TABLE NO. 15

ANALYSED BY CATEGORY OF RESEARCH WORKER — QUESTION 13

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
1-3 TIMES PER MONTH	92 .	44	11	12	21	48	12	21	15
	15 .	16	10	14	26	15	12	19	14
4-8 TIMES	289 .	133	53	43	37	156	56	50	50
	48 .	47	47	50	45	49	55	45	47
9-12 TIMES	132 .	67	28	22	17	65	17	20	28
	22 .	24	25	26	21	20	17	18	26
MORE OFTEN	86 .	36	20	9	7	50	17	19	14
	14 .	13	18	10	9	16	17	17	13

LOCATION OF THE LIBRARY USED

TABLE LOCATION OF THE LIBRARY USED MOST

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 16
QUESTION 14

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
SAME BUILDING - SAME FLOOR	92	40	9	11	20	52	7	11	34
	15	14	8	13	24	16	7	10	32
DIFFERENT FLOOR	149	70	44	7	19	79	43	11	25
	25	25	39	8	23	25	42	10	23
DIFFERENT BUILDING - CONVENIENT	281	132	49	51	32	149	50	60	39
	47	47	44	59	39	47	49	55	36
INCONVENIENT	73	34	6	18	10	39	6	25	8
	12	12	5	21	12	12	6	23	7
NOT STATED	9	5	4	0	1	4	0	3	1
	2	2	4	0	1	1	0	3	1

NUMBER OF PERIODICALS USED REGULARLY BY THE SAMPLE

TABLE NUMBER OF TECHNICAL PERIODICALS SEEN OR SCANNED REGULARLY — TABLE NO. 17

ANALYSED BY CATEGORY OF RESEARCH WORKER — QUESTION 15

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
0-4	127 •	60	24	19	17	67	19	29	19
	21 •	21	21	22	21	21	19	26	18
5-8	169 •	79	31	22	26	90	27	29	34
	28 •	28	28	26	32	28	26	26	32
9-16	160 •	75	35	21	19	85	33	24	28
	27 •	27	31	24	23	27	32	22	26
17 OR MORE	63 •	21	8	2	11	42	16	11	15
	11 •	7	7	2	13	13	16	10	14
NOT STATED	80 •	45	14	22	9	35	7	17	11
	13 •	16	13	26	11	11	7	15	10

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE No.18A
QUESTION 15

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
ELECTRONICS	116	47	10	15	22	69	7	28	34
J APPL PHYS	120	42	20	7	15	78	37	19	22
PROC IEEE	151	56	26	16	14	95	29	32	34
PROC IEE	141	65	35	16	14	76	28	27	21
BRIT J APPL PHYS	62	32	19	3	10	30	13	7	10
IEEE TRANS ELEC DEVIC	44	19	10	3	6	25	10	2	13
DESIGN ELECTRONICS	46	29	6	8	15	17	1	10	6
ELECTRONIC ENGINEERING	98	61	22	20	19	37	4	21	12
BELL SYST J	72	31	4	14	13	41	3	16	22
IEEE TRANS (UNSPEC)	58	21	7	6	8	37	19	8	10
MICROWAVE J	51	16	6	5	5	35	6	11	18
ELECTRONIC DESIGN	36	12	0	7	5	24	2	8	14
J SCI INSTRUM	54	26	14	7	5	28	8	13	7
ELECTRONIC LETTERS	100	40	27	6	7	60	31	14	15
REV SCI INSTRUM	41	14	7	2	5	27	5	14	8
SOLID STATE ELECONICS	44	17	8	3	6	27	11	5	11
PHYS REV	58	21	14	5	2	37	26	6	5
VACUUM	18	5	1	1	3	13	2	5	6
J ELECTROCHEM SOC	21	11	1	1	9	10	0	2	8
WIRELESS WORLD	55	31	10	13	8	24	2	12	10
ELECTRONICS WEEKLY	14	10	1	5	4	4	1	1	2
MICROWAVES	32	8	2	4	2	24	5	5	14
APP OTICA	39	15	4	7	4	24	5	12	7
SOLID STATE TECHNOL	12	4	0	0	4	8	1	2	5
APP PHYS LETTERS	48	14	5	5	4	34	16	11	7
CONTROL	18	12	6	2	4	6	3	1	2
ELECTRONIC EQUIP NEWS	15	10	0	4	6	5	0	3	2
J OPT SOC AMER	20	9	2	5	2	11	4	5	2
MICROELECTRONICS	21	10	6	3	1	11	1	4	6
J PHYS CHEM SOLIDS	18	4	2	1	1	14	8	2	4
IEE TRANS MTT	38	10	3	4	3	28	8	5	15
DIRECT CURRENT	2	2	0	0	2	0	0	0	0

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE No.18A
QUESTION 15
(continued)
RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
ELECTRONIC COMP	24 .	12	4	4	4	12	0	6	6
ELECT REV	5 .	3	2	0	1	2	0	1	1
INT J ELECTRONICS	11 .	7	4	1	2	4	2	0	2
IEEE SPECTRUM	16 .	10	2	5	3	6	2	1	3
IEEE TRANS COMPUTERS	18 .	4	3	0	1	14	8	3	3
IEEE TRANS AP	26 .	6	1	3	2	20	6	7	7
IEEE J QUANTUM ELECTONIC	22 .	5	2	2	1	17	7	7	3
J AMER CERAM SOC	5 .	4	1	1	2	1	0	1	0
PRODUCT ENGNG	1 .	0	0	0	0	1	0	0	1
RADIO & ELEC ENGNG	18 .	6	1	3	2	12	6	0	6
SOVIET PHYS TECH PHYS	9 .	3	1	1	1	6	2	1	3
COMPUTER WEEKLY	10 .	4	1	1	2	6	4	0	2
OTHERS	500 .	235	102	72	61	265	86	96	83

TABLE TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE No.18B
QUESTION 15

COLUMN PERCENTAGES

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
ELECTRONICS	19	17	9	17	27	22	7	25	32
J APPL PHYS	20	15	18	8	18	24	36	17	21
PROC IEEE	25	20	23	19	17	30	28	29	32
PROC IEE	24	23	31	19	17	24	27	25	20
BRIT J APPL PHYS	10	11	17	3	12	9	13	6	9
IEEE TRANS ELEC DEVIC	7	7	9	3	7	8	10	2	12
DESIGN ELECTRONICS	8	10	5	9	18	5	1	9	6
ELECTRONIC ENGINEERING	16	22	20	23	23	12	4	19	11
BELL SYST J	12	11	4	16	16	13	3	15	21
IEEE TRANS (UNSPEC)	10	7	6	7	10	12	19	7	9
MICROWAVE J	9	6	5	6	6	11	6	10	17
ELECTRONIC DESIGN	6	4	0	8	6	8	2	7	13
J SCI INSTRUM	9	9	13	8	6	9	8	12	7
ELECTRONIC LETTERS	17	14	24	7	9	19	30	13	14
REV SCI INSTRUM	7	5	6	2	6	8	5	13	7
SOLID STATE ELECONICS	7	6	7	3	7	8	11	5	10
PHYS REV	10	7	13	6	2	12	25	5	5
VACUUM	3	2	1	1	4	4	2	5	6
J ELECTROCHEM SOC	4	4	1	1	11	3	0	2	7
WIRELESS WORLD	9	11	9	15	10	8	2	11	9
ELECTRONICS WEEKLY	2	4	1	6	5	1	1	1	2
MICROWAVES	5	3	2	5	2	8	5	5	13
APP OTICA	7	5	4	8	5	8	5	11	7
SOLID STATE TECHNOL	2	1	0	0	5	3	1	2	5
APP PHYS LETTERS	8	5	4	6	5	11	16	10	7
CONTROL	3	4	5	2	5	2	3	1	2
ELECTRONIC EQUIP NEWS	3	4	0	5	7	2	0	3	2
J OPT SOC AMER	3	3	2	6	2	3	4	5	2
MICROELECTRONICS	4	4	5	3	1	3	1	4	6
J PHYS CHEM SOLIDS	3	1	2	1	1	4	8	2	4
IEE TRANS VIT	6	4	3	5	4	9	8	5	14
DIRECT CURRENT	*	1	0	0	2	0	0	0	0
ELECTRONIC COMP	4	4	4	5	5	4	0	5	6

TABLE: TECHNICAL PERIODICALS FOUND PERSONALLY MOST IMPORTANT

ANALYSED BY: CATEGORY OF RESEARCH WORKER

BASE: ALL INFORMANTS

TABLE No.18B
QUESTION 15
(continued)
COLUMN PERCENTAGES

RESPONSES	TOTAL	********CONTROL GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
ELECT REV	1	1	2	0	1	1	0	1	1
INT J ELECTRONICS	2	2	4	1	2	1	2	0	2
IEEE SPECTRUM	3	4	2	6	4	2	2	1	3
IEEE TRANS COMPUTERS	3	1	3	0	1	4	8	3	3
IEEE TRANS AP	4	2	1	3	2	6	6	6	7
IEEE J QUANTUM ELECTONIC	4	2	2	2	1	5	7	6	3
J AMER CERAM SOC	1	1	1	1	2	*	0	1	0
PRODUCT ENGNG	*	0	0	0	0	*	0	0	1
RADIO & ELEC ENGNG	3	2	1	3	2	4	6	0	6
SOVIET PHYS TECH PHYS	2	1	1	1	1	2	2	1	3
COMPUTER WEEKLY	2	1	1	1	2	2	4	0	2
OTHERS	83	84	91	84	74	83	84	87	78

ABSTRACTS JOURNALS USED

TABLE ABSTRACT JOURNALS AND LISTS OF TITLES USED REGULARLY — TABLE NO. 19*A

ANALYSED BY CATEGORY OF RESEARCH WORKER — QUESTION 16

BASE ALL INFORMANTS

RAW NUMBERS

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
OWN ORGANISATION	313	143	16	76	51	170	18	84	68
BRITISH TECH INDEX	4	1	0	0	1	3	2	0	1
CHEMICAL ABSTRACTS	14	9	5	1	3	5	4	0	1
CHEMICAL TITLES	2	2	1	0	1	0	0	0	0
COMPUTER ABSTRACTS	29	16	9	2	5	13	7	1	5
CONTROL ABSTRACTS	26	14	9	3	2	12	9	2	1
CURRENT CONTENTS	35	19	12	3	4	16	11	1	4
CURRENT PAPERS IN ELECTROTECHNOLOGY	199	105	45	30	30	94	22	34	38
6	140	69	33	20	16	71	26	21	24
7	36	16	10	4	2	20	5	10	5
SCIENCE ABSTRACTS-B	125	67	35	16	16	58	28	14	16
ELEC & COMMUNIC ABSTRCTS	55	36	20	5	11	19	6	7	6
ENGINEERING INDEX	15	10	4	1	5	5	5	0	0
INDEX AERONAUTICS	1	0	0	0	0	1	1	0	0
INSTRUMENT ABSTRACTS	10	5	2	1	2	5	2	2	1
NASA SCI & TECHNICAL AEROSPACE REPORTS	52	27	10	12	5	25	6	12	7
NUCLEAR SCI ABSTRACTS	14	9	5	3	1	5	2	3	0
SCIENCE ABSTRACTS-A	105	56	37	11	8	49	31	9	9
SOLID STATE ABSTRACTS	33	15	6	3	6	18	5	4	9
US GOVT RESEARCH & DEVELOPMENT REPORTS	69	32	9	11	12	37	6	12	19
OTHERS	127	30	10	10	10	97	39	26	32
NOT STATED	53	32	20	4	8	21	6	4	11

ABSTRACTS JOURNALS USED

TABLE ABSTRACT JOURNALS AND LISTS OF TITLES USED REGULARLY — TABLE NO. 19*B

ANALYSED BY CATEGORY OF RESEARCH WORKER — QUESTION 16

BASE ALL INFORMANTS

COLUMN PERCENTAGE

RESPONSES	TOTAL	*******CONTROL GROUP******* TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY	********USER GROUP******** TOTAL	UNIV-ERSITY	GOVER-NMENT	INDU-STRY
	599	280	112	86	82	319	102	110	107
OWN ORGANISATION	52	51	14	88	62	53	18	76	64
BRITISH TECH INDEX	1	*	0	0	1	1	2	0	1
CHEMICAL ABSTRACTS	2	3	4	1	4	2	4	0	1
CHEMICAL TITLES	*	1	1	0	1	0	0	0	0
COMPUTER ABSTRACTS	5	6	8	2	6	4	7	1	5
CONTROL ABSTRACTS	4	5	8	3	2	4	9	2	1
CURRENT CONTENTS	6	7	11	3	5	5	11	1	4
CURRENT PAPERS IN ELECTROTECHNOLOGY	33	38	40	35	37	29	22	31	36
6	23	25	29	23	20	22	25	19	22
7	6	6	9	5	2	6	5	9	5
SCIENCE ABSTRACTS-B	21	24	31	19	20	18	27	13	15
ELEC & COMMUNIC ABSTRCTS	9	13	18	6	13	6	6	6	6
ENGINEERING INDEX	3	4	4	1	6	2	5	0	0
INDEX AERONAUTICS	*	0	0	0	0	*	1	0	0
INSTRUMENT ABSTRACTS	2	2	2	1	2	2	2	2	1
NASA SCI & TECHNICAL AEROSPACE REPORTS	9	10	9	14	6	8	6	11	7
NUCLEAR SCI ABSTRACTS	2	3	4	3	1	2	2	3	0
SCIENCE ABSTRACTS-A	18	20	33	13	10	15	30	8	8
SOLID STATE ABSTRACTS	6	5	5	3	7	6	5	4	8
US GOVT RESEARCH & DEVELOPMENT REPORTS	12	11	8	13	15	12	6	11	18
OTHERS	21	11	9	12	12	30	38	24	30
NOT STATED	9	11	18	5	10	7	6	4	10

TIME SPENT SCANNING OR READING TECHNICAL INFORMATION

TABLE — NUMBER OF HOURS PER WEEK SPENT SCANNING OR READING PUBLISHED TECHNICAL INFORMATION

TABLE NO. 20
QUESTION 17

ANALYSED BY — CATEGORY OF RESEARCH WORKER

RAW NUMBERS

BASE — ALL INFORMANTS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
LESS THAN 2.5 HOURS	115 .	53	12	20	21	62	20	17	25
	19 .	19	11	23	26	19	20	15	23
2.5-4 HOURS	135 .	57	33	10	14	78	22	28	28
	23 .	20	29	12	17	24	22	25	26
4-7 HOURS	206 .	108	46	29	33	98	36	35	27
	34 .	39	41	34	40	31	35	32	25
8 HOURS OR MORE	138 .	62	21	27	14	76	22	30	24
	23 .	22	19	31	17	24	22	27	22
NOT STATED	5 .	0	0	0	0	5	2	0	3
	1 .	0	0	0	0	2	2	0	3

TIME SPENT READING AND ASSIMILATING TECHNICAL INFORMATION

TABLE NUMBER OF HOURS PER WEEK SPENT READING AND ASSIMILATING (AS DISTINCT FROM SCANNING) PUBLISHED TECHNICAL INFORMATION

ANALYSED BY CATEGORY OF RESEARCH WORKER

BASE ALL INFORMANTS

TABLE NO. 21

QUESTION 18

RAW NUMBERS

RESPONSES	TOTAL	CONTROL GROUP TOTAL	CONTROL GROUP UNIVERSITY	CONTROL GROUP GOVERNMENT	CONTROL GROUP INDUSTRY	USER GROUP TOTAL	USER GROUP UNIVERSITY	USER GROUP GOVERNMENT	USER GROUP INDUSTRY
	599	280	112	86	82	319	102	110	107
LESS THAN 2.5 HOURS	304	138	47	40	51	166	47	54	65
	51	49	42	47	62	52	46	49	61
2.5-4 HOURS	131	62	26	17	19	69	19	35	15
	22	22	23	20	23	22	19	32	14
4-7 HOURS	106	53	27	18	8	53	22	15	16
	18	19	24	21	10	17	22	14	15
8 HOURS OR MORE	42	22	9	9	4	20	7	6	7
	7	8	8	10	5	6	7	5	7
NOT STATED	16	5	3	2	0	11	7	0	4
	3	2	3	2	0	3	7	0	4

Chapter 13

THESAURUS DEVELOPMENT AND DOCUMENT INDEXING

Work on the Investigation began not long after the publication of the first edition of the Engineering Joint Council's Thesaurus of Engineering Terms. It was natural, therefore, to seek to use this as the controlled vocabulary for document indexing and profile compilation. However, it was quickly apparent that the EJC Thesaurus was not an adequate tool for indexing the very detailed subject matter of documents in the field of electronics research and that it would be necessary to supplement it considerably. As a result it was decided to construct a thesaurus on cards to cover our particular field of interest and to incorporate into it such terms from the EJC Thesaurus as met our requirements. The same system for Narrower Term (NT), Broader Term (BT), USE and Used for (UF) references was adopted. Related Term (RT) reference was not, in general, adopted. It was felt that proliferation of RT references, whose precise relation to the term in question was unclear, would be time-wasting and unhelpful and it was hoped to restrict the use of such cross-references to terms actually found linked in profiles. This was, in fact, never done, and the types of cross-reference used in the thesaurus were kept to NT, BT, USE AND UF.

Addition of terms to the thesaurus was determined by the requirements of the documents which had to be indexed and of the information requirements from which subject profiles had to be compiled. The major concern was to expand the thesaurus to cope with these requirements as they arose and to fit new terms into the existing structure. This naturally resulted in a somewhat uneven growth, depending on the areas of particular concern to the Investigation and little attention was paid to any potential use it might have as a general-purpose tool for indexing material in the general field of electronics.

In compiling the thesaurus we were fortunate to have access to a draft thesaurus developed by Jean Aitchison in connection with a revision of the printed indexes to Electrical and Electronics Abstracts.

Pre-coordination of terms

The major problem, as with all thesaurus construction, was to decide the optimum degree of pre-coordination of terms. The aim to produce the smallest thesaurus which would allow the subjects of interest to each user to be distinguished from those in which he had no interest. Thus, if every user interested in transistors was interested in all types of transistor, then inclusion of the species of transistor in the thesaurus was not necessary. However, if any user was interested in a particular species that species had to be capable of being distinguished in the thesaurus.

In general, as terms were required for document indexing or for profile compilation, they were added to the thesaurus after a check that no suitable term was already present in the thesaurus. Some attempt was made to control the proliferation of terms that would have resulted from the inclusion of highly-pre-co-ordinated terms. This was done by examining each candidate term to discover whether it could be adequately represented by a combination of two or more existing broader terms. The test for adequacy was that a document dealing with the subject of the specific term should provide useful information to a person interested in the subject of one or other of the general terms used in its place. Thus, the term "Colour Television Receivers" could be represented by the two terms "Colour Television" and "Television Receivers" since someone interested in colour TV or TV receivers would also be interested in colour TV receivers. On the other hand,in the case of Gallium Arsenide Lasers it was thought preferable to keep this as a single term since someone interested in gallium arsenide would probably not be interested in the many articles describing gallium arsenide lasers.

This fairly simple rule-of-thumb helped to restrict the number of individual used terms in the thesaurus. However, at least in the early stages of thesaurus building, there was a tendency to use single terms where later experience (and the rule) would have dictated a greater degree of pre-co-ordination. Thus, initially, a concept such as capacitance measurement was dealt with by the use of two single terms "Capacitance" and "Measurement". The liability of this practice to cause false coordinations in the searches soon became apparent and as a result there began a tendency to prefer the more specific terms.

Specificity

This tendency was reinforced by the practice of allowing the stated information requirements of users to dictate the level of specificity of terms. That is to say that, unless some obvious advantage could be seen, it appeared best to adopt terms which directly expressed the real requirements of users rather than to produce an unnecessary complication by generalising or translating the terms. This, of course, does not affect the question of synonym control.

The tendency to include very specific terms in the thesaurus did, however, considerably increase the number of terms in the thesaurus and consequently the number required in profiles. This brought trouble in that the system had been designed for profiles having a maximum size of approximately one hundred terms. The considerable increase of specific terms which might otherwise have been dealt with by coordination of two or more existing terms increased the number of terms required and in some cases the limits were exceeded.

This situation was resolved by adopting 'posting-up' in the indexing of documents, ie assigning the general term as well as the specific term in certain cases. This was done for such terms as Filters, Amplifiers, etc. Thus, where a user was interested in all types of filters his profile needed to use only the term Filters whereas before posting-up was adopted all the specific types of filter had to be included in the profile. (The 'posting-up' terms are listed on page 5).

Growth of the thesaurus

The maximum size of thesaurus estimated for in designing the computer system was 4,000 terms, not including lead-in terms.

As expected the growth was very rapid in the early stages of profile compilation and indexing of the test document collection. Thus, after only four months the thesaurus contained some 1,500 terms and this figure had risen to some 2,600 terms after ten months. By this time virtually all of the 600 profiles had been compiled and approximately 600 documents had been indexed. Figures 1 and 2 show the growth of the thesaurus in the period July 1967 to June 1969.

From November 1968 the addition of terms is almost entirely due to the demands of document indexing and it is noticeable that in the following six months some 250 terms are added, ie approximately ten per week. This rate of growth may be higher than in other areas since many of the terms represent new solid-state materials being synthesized or investigated for their electronic properties.

Owing to the fact that profile compilation and document indexing was carried out by the one team of Indexer/Analysts who had immediate control over the thesaurus, necessary additions and modifications to it could be carried out quickly.

As a result when failure analysis was performed it was found that relatively few failures could be attributed directly to the thesaurus. In fact only eight percent of Recall and Precision failures were so attributed.

The good performance of the SDI Thesaurus was also confirmed in the Comparative Evaluation of Index Languages study (INSPEC Reports 70/01 and 70/02) where the SDI controlled languages was found to perform better than any of the other index languages which were studied.

Document indexing

Documents were indexed by assigning to them a set of appropriate descriptors selected from the thesaurus. The procedure was to scan the document or the significant portions of it, eg title, abstract, introduction, conclusion and references and to isolate the significant concepts with which the author was concerned. At this stage the aim was only to record the significant concepts and in general the language of the document was used to describe these concepts.

The natural language terms were recorded on the left-hand side of the indexing work sheet. In the subsequent operation the natural-language terms were translated into the controlled terms of the thesaurus. In the majority of cases the appropriate controlled terms were already present in the thesaurus with cross-references or lead-ins from the natural-language terms. In many cases, of course, the natural-language and controlled-language terms were identical. Where the concept was catered for by an existing thesaurus term the appropriate term would be entered direct on to the document input sheet (Figure 5) and the corresponding number written on the right- hand side of the document indexing sheet (Figure 4) to show what term had been used to represent the natural-language term.

Where the appropriate term to represent a natural-language concept was not specified in the thesaurus, the indexer wrote opposite it on the right-hand side of the index sheet the suggested additional entry to the thesaurus to cater for the new term. The document, document input sheet and indexing sheet were then passed to the thesaurus controller who approved the new entry or discussed it further, entered the appropriate term in the document input sheet and arranged for the thesaurus and the computer descriptor file to be updated.

Copies of specimen sheets from the Descriptor File are given in Appendix 13A. Author names and journal Coden also appear as descriptors in this list.

All the indexing was done at the level of specificity of the document, e.g. an article on the deterioration of insulating materials caused by gamma radiation would be indexed under Deterioration, Insulating materials, and Gamma rays, not under, say, Radiation effects, Insulating materials and Nuclear radiation. At the same time the indexer was free to include other more general terms if he thought them likely to be useful.

As mentioned previously, in certain cases posting-up to generic terms was adopted. These were additional to the more specific terms arising from the document itself. Posting-up was, in fact, adopted largely because of problems caused by the limitations on the size of profiles.

Posting-up Terms

Semiconductor devices, Semiconductor materials, Oscillators, Amplification, Control systems, Communication systems, Modulation Lasers, Gases, Metals, Aerials, Filters, Alkali Halides, Rare Earths, Pulse modulation, Microwaves, Alloys, Radar, Waveguides.

Exhaustivity of Indexing

The number of descriptors to be assigned per document was not laid down, but was left for the indexer to decide. However, in the light of experience during the initial stages of the Investigation it was generally agreed that the significant, indexable concepts in the average document were not likely to require more than 10 descriptors. In fact, as will be seen from Figure 3. the average number of descriptors assigned per document was rather less than this. In the period from week 011 to 025 inclusive an average of approximately eight descriptors per document were assigned. These figures in all cases exclude author descriptors.

At week 026 a change had to be made in indexing practice owing to a very large increase in the number of documents to be indexed. This arose as a result of the ending of various industrial disputes in the USA which had held up supplies of journals. To cope with this sudden inflow of documents it was necessary to restrict the number of index terms assigned per document. This was less to save the time of the indexers than to allow increased throughput by the tape typist. (The capacity of the tape typewriter was at all times a serious limiting factor in the system).

To increase throughput the indexers were asked to restrict the number of terms per document to not more than five except in cases where this would result in obviously inadequate indexing. The five terms did not include any additional terms required to fulfill the requirements of posting-up.

The inflow of documents continued for a considerable time at a much higher level than had been expected so that what had been adopted as a temporary emergency measure persisted for approximately three-and-a-half months. At the end of this time the restriction was lifted but the average number of terms assigned thereafter never reached the previous level. The reason for this was probably partly, by the now, ingrained habit of reduced indexing and partly refinement of the indexing as a result of system performance analysis.

The average number of index terms assigned per document over the course of the operational service is shown in Figure 3.

Descriptor file printout

With prolonged use of the thesaurus the need for indexers to look up terms in the card file diminished. However because the computer validation check on documents input to it insisted on use of the exact form of word (i.e. would not accept singular for plural or vice versa) it was necessary in many cases for the indexers to check the form required.

To facilitate this checking each indexer was provided with a regularly updated print-out of the Descriptor File used by the computer for the validation check (see Appendix 13A). This undoubtedly helped to reduce the incidence of erroneous forms of descriptors and saved time. At the same time it led to a tendency to use it when consultation of the full thesaurus would have been more appropriate. For example an indexer faced by the concept 'Modulation' in a document might check the Descriptor File printout to ensure that this term was present whereas consultation of the thesaurus would have shown the Narrower Term 'Electrooptic Modulation' which might have been more appropriate.

This leads to consideration of the value of the thesaurus in the SDI system.

Without doubt the development and maintenance of thesaurus is a very large task requiring considerable experience on the part of the person responsible and a great deal of associated clerical work. The most valuable assistance it provides in return is a record of the decisions made in coding particular concepts, e.g. "Colour television receivers Use Colour television + Television receivers", since without this record a variety of variant codings could be applied, e.g. Colour + Television + Receivers, Colour receivers + Television etc. This record allows indexing of documents and compilation of search profiles to use the same coding and thus increases the chance of retrieval.

In other respects the thesaurus is perhaps less useful than is sometimes supposed. Control of synonyms, which is one of its accepted virtues, is of course important, but the incidence of true synonyms in science and technology is low, particularly when dealing with a relatively restricted field. Where two words exist to cover the same meaning it is often because they are not truly synonymous over the full range of applications, even if it is only that an engineer will tend to use one form and the pure scientist the other. Where true synonyms do occur, eg aerials and antennas, this fact is usually well known to both users and operators of the system.

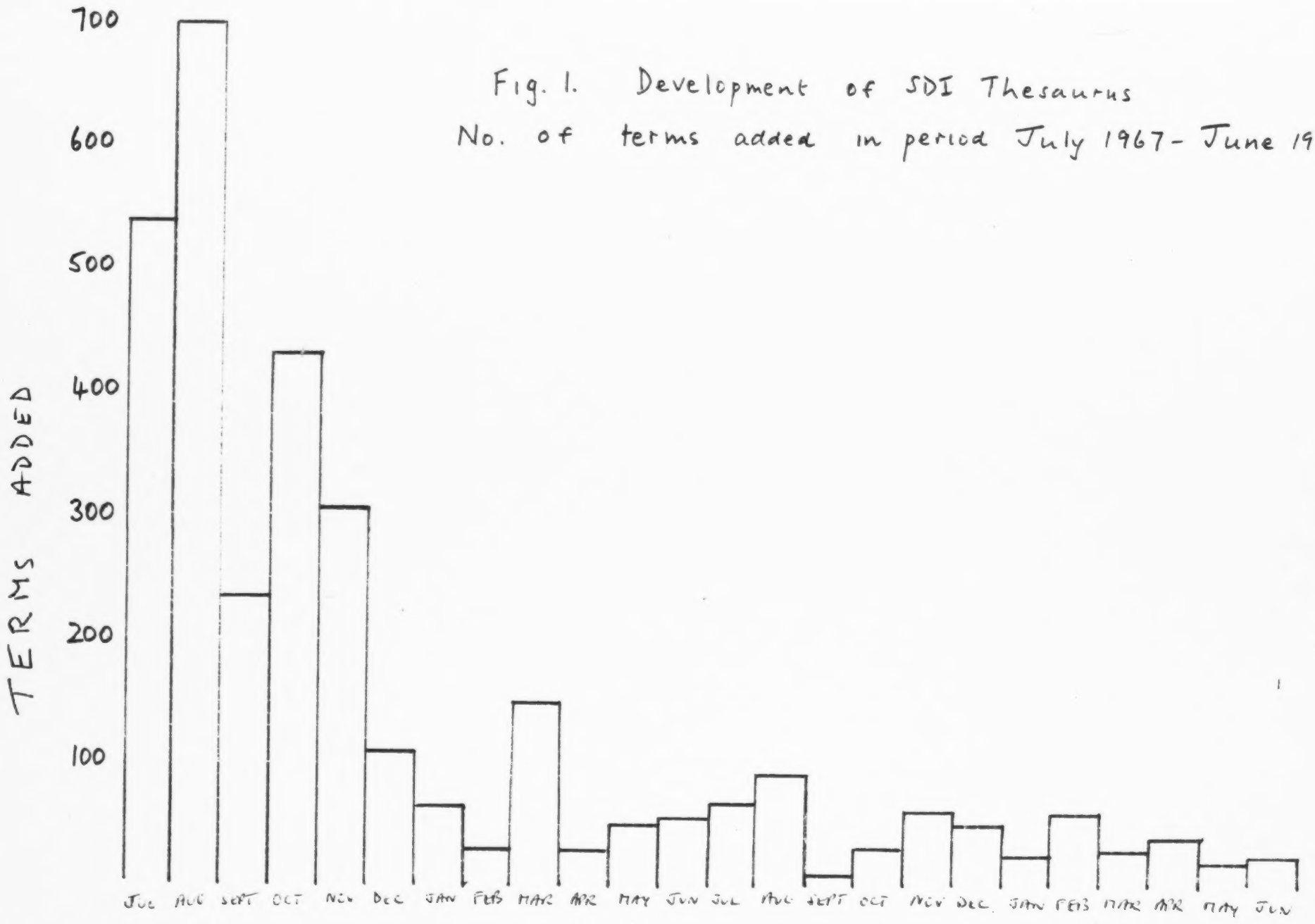
Recording of relationships is also a useful function of the thesaurus, showing Broader Terms, Narrower Terms and related Terms. However, many of the BT and NT relationships are self-evident and many of the RTs are unsatisfactory in that the relationship is ill-defined.

Many of the lead-in entries are almost redundant, being of the type, 'Filters optical, Use Optical filters'. The type of lead-in which is needed is 'High field microwave oscillations in bulk semiconductor materials' Use 'Gunn effect'. These are, of course, much more difficult to include and use.

All this is not to dispute the need for some of this information to be available to users of the system but to cast doubt on whether much of the information contained in thesauri is not redundant. This takes considerably time and effort to add to the thesaurus but serves often only to mask the much smaller number of entries which carry really significant information.

It seems possible therefore that more examination is needed of the real role played by the thesaurus in document indexing and search-profile construction and of the form in which it can most efficiently and economically meet these requirements.

Fig. 1. Development of SDI Thesaurus
No. of terms added in period July 1967 - June 1969



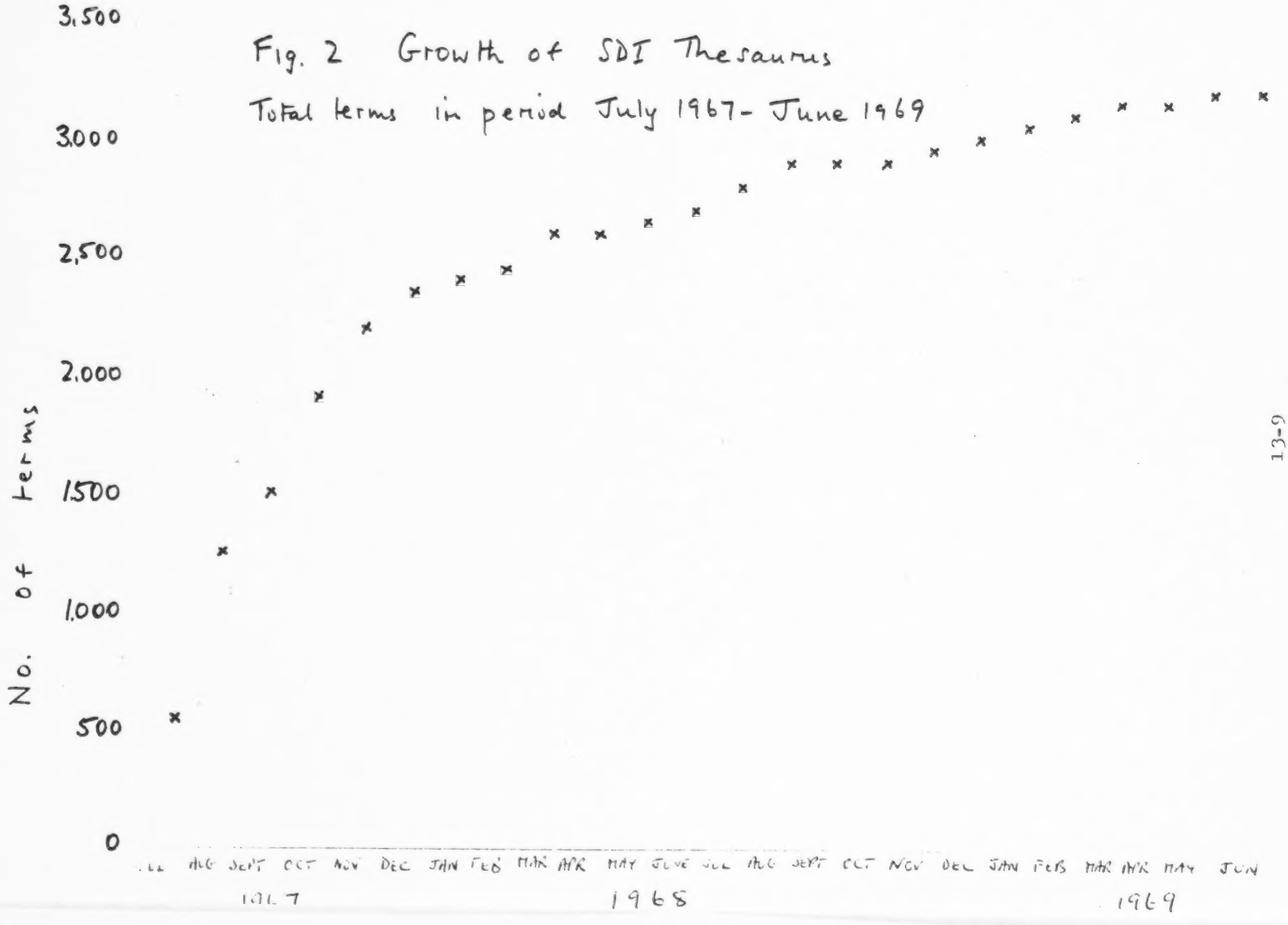


Fig. 2 Growth of SDI Thesaurus
Total terms in period July 1967 - June 1969
No. of terms
3,500
3,000
2,500
2,000
1500
1,000
500
0
JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JUL AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUN
1967
1968
1969

Figure 3.

Average number of index terms assigned per document during the weekly operational service period

Week Number	Average Number of Terms	Week Number	Average Number of Terms
011	6.8	035	5.1
012	7.4	036	5.2
013	9.1	037	5.0
014	9.0	038	4.9
015	8.2	039	5.7
016	9.0	040	5.7
017	8.8	041	5.7
018	9.0	042	6.0
019	6.8	043	5.3
020	7.3	044	6.1
021	7.6	045	5.8
022	6.5	046	6.2
023	7.6	047	6.4
024	7.4	048	5.9
025	7.7	049	6.5
026	5.8	050	6.3
027	5.4	051	6.0
028	5.3	052	6.7
029	5.3	053	6.3
030	5.3	054	5.4
031	5.1	055	5.8
032	5.0	056	8.1
033	5.2	057	7.4
034	5.2	058	6.9

SDI DOCUMENT INDEXING WORK SHEET FIGURE 4.

SDI DOCUMENT ANALYSIS DOC.No. 002017

Natural Language Descriptors/Thesaurus

Adaptive Threshold Logicgate	1 + 2 + 3
Capacitor analog weights	4 + 5
Linearly seperable switching	6 + 7
Functions	
Memory Circuits	8
Stabilized Capacitors voltages	9 + 10

Indexed	Time	Descriptor Sheet

FIGURE 5.

SDI DOCUMENT INPUT FORM

Spaces must not be punched except where a space symbol (V) appears.

Nothing outside this border is to be punched

Title

Authors

Journal Citation

Coden

Authors
E.G.Brown J.

Descriptors
1 Adaptive circuits
2 Logic circuits
3 Threshold logic
4 Capacitors
5 Electronic weighting
6 Linear separability
7 Switching circuits
8 Memory devices
9 Voltage
10 Stabilization
11
12
13
14
15
16
17
18
19
20

Descriptor Sheet No.

S.14a

Chapter 14

PROBLEMS OF PRINTING NOTIFICATION CARDS AND ASSESSING NUMBERS REQUIRED FOR EACH DOCUMENT

In any SDI system it is desirable, from the standpoint of cost, that the 'utilisation rate' per item of information input should be high i.e. that the average number of relevant notifications produced per document should be large.

At the same time the utilisation rate may affect the method used for producing the document notifications. For example in a system operating with a small data base within a restricted subject field, the number of notifications per individual document may be very high. In such circumstances it may be thought more economical to produce multiple copies of the same information for despatch to the users by means other than a line printer.

The considerations leading to use of duplicated notifications in the SDI Investigation included the cost of line printer output, but the major consideration was legibility and appearance of the notifications. It was thought that cards printed using typewriter upper and lower case would be much more attractive to users than computer upper-case printout.

Use of duplicated cards did however cause problems, since the notifications for each user had to be individually selected from, in this case, a set of approximately 300 cards. This is undoubtedly a time-consuming task requiring considerable care to avoid selection of incorrect cards. The error rate was in fact surprisingly low but this can only be attributed to the great care taken by the clerk responsible.

However the chief problem in use of duplicated notifications, even in a system where the number of documents input to each run is relatively small, is that of determining how many notification cards to produce for each document.

Obviously this is mos' easily done after the matching run has been completed, when, if the computer is producing adequate statistics, the number of notifications for each document will be known.

Such statistics were not available from the SDI program suite and therefore this option was not open. However even where this facility is available the information is really required earlier than the end of the matching run. To ensure that notifications are as current as possible it is essential that the duplication of notification cards and the computer matching should be carried out in parallel rather than serially. In the SDI Investigation, production of the notification cards could in fact commence before despatch of the document tapes to the computer and in general all cards were ready by the time the matching output was returned.

In the early weeks of the investigation, counts were made of the number of notifications per document to decide how many notification cards to produce.

The results are shown in Figures 1 and 2.

It can be seen that the distribution has a considerable tail and that some few documents feature in a hundred or more notifications. It is fairly simple to work out the number of cards that must be produced to cover a given percentage of cases but is is not a simple matter to print extra cards for particular documents and the complication caused in selection and despatch by waiting for extra cards to be produced is very considerable.

An examination was therefore made of the documents which were found to require more than 70 notification cards to discover whether they were on particular subjects which could be given special treatment. The distribution of such documents in weeks 011-014 is shown in Figure 3.

The majority of these documents related to 'microwave semi-conductor devices' and to 'integrated circuits' both of which subjects were of interest to a large proportion of users. Since it was obviously wasteful to print enough notification cards for each document to cover all expected demands it was decided to print 50 cards for each document and 90 for those in the popular subjects. Even this solution, which was still wasteful in cards, did not meet the problem entirely and significant trouble was encountered in running off additional copies of cards.

It is always likely that in any SDI service the frequency of notifications of individual documents will have a distribution similar to Figures 1 and 2.

Apart from the problems of selecting individual sets of cards, there will always be difficulties in dealing with the long tail of highly used documents. Short of accepting the delay involved in waiting for statistics of document notification frequency, it is likely that, even with a fairly restricted data base, the extra computer print-out cost involved in printing individual notifications for each user will have to be accepted.

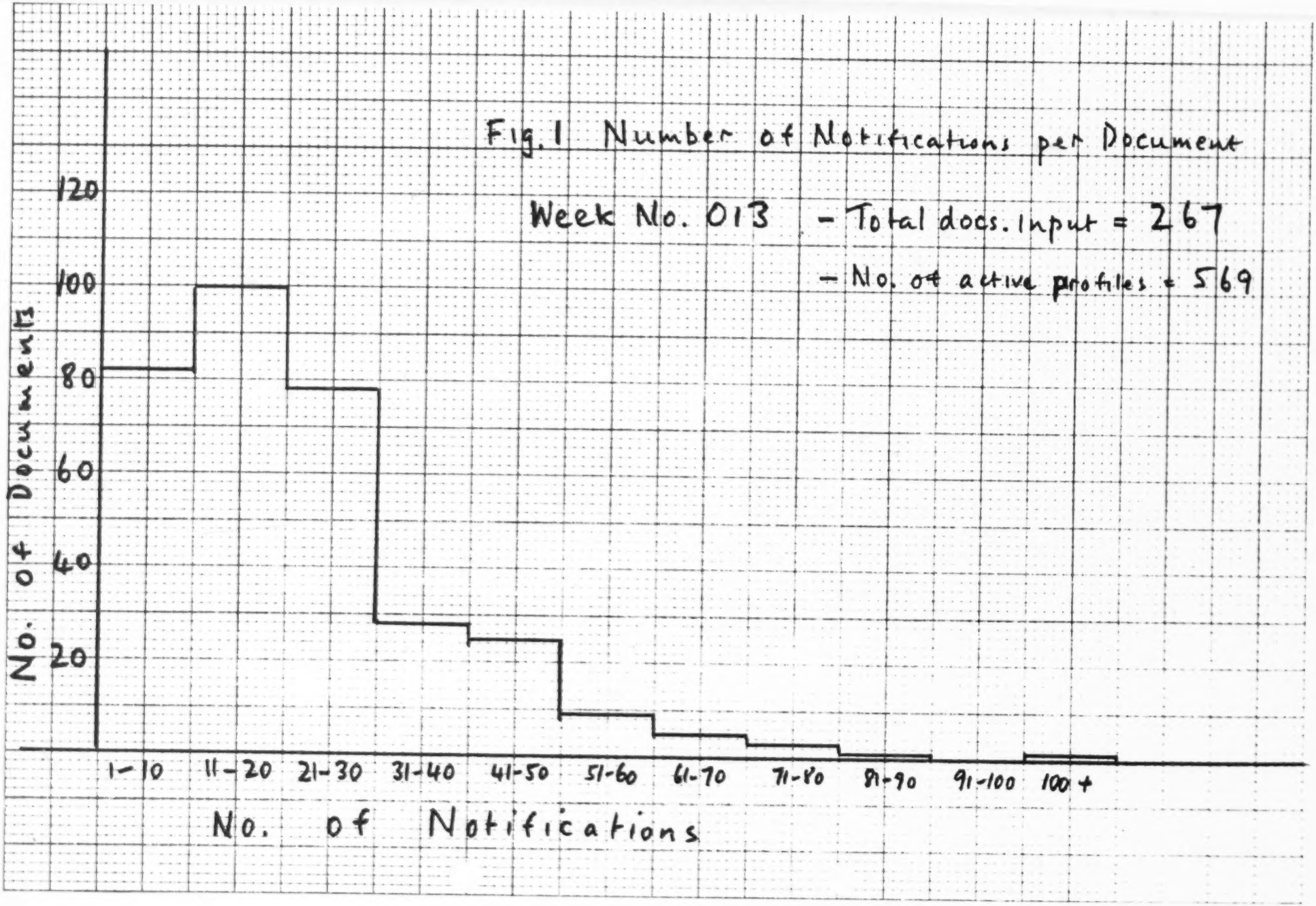


Fig. 1 Number of Notifications per Document
Week No. 013 - Total docs. Input = 267
- No. of active profiles = 569
No. of Documents
120
100
80
60
40
20
1-10
11-20
21-30
31-40
41-50
51-60
61-70
71-80
81-90
91-100
100 +
No. of Notifications

Fig. 2 Number of Notifications per Document

Week No. 015 - Total docs input = 250

- No. of active profiles = 568

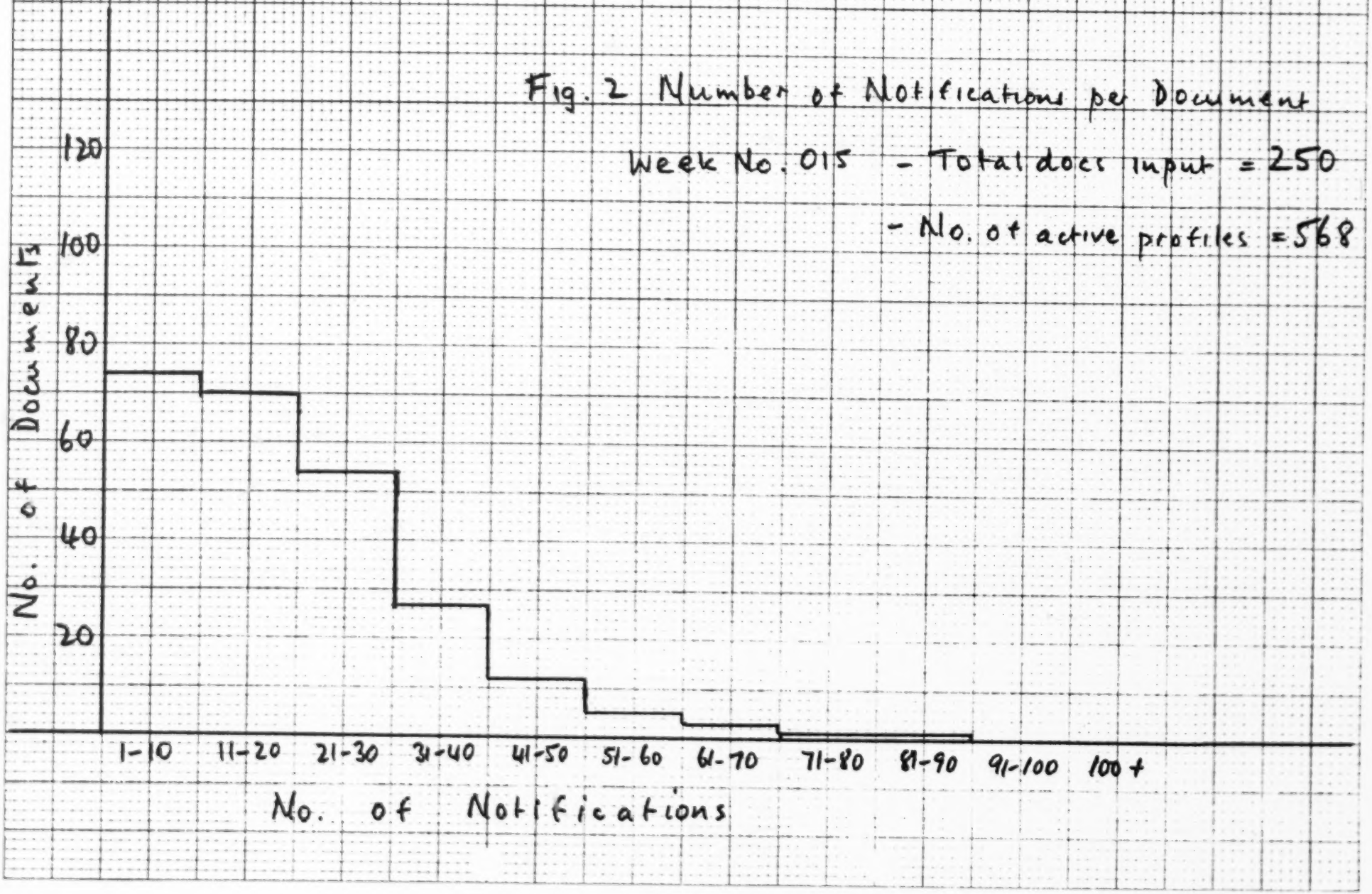
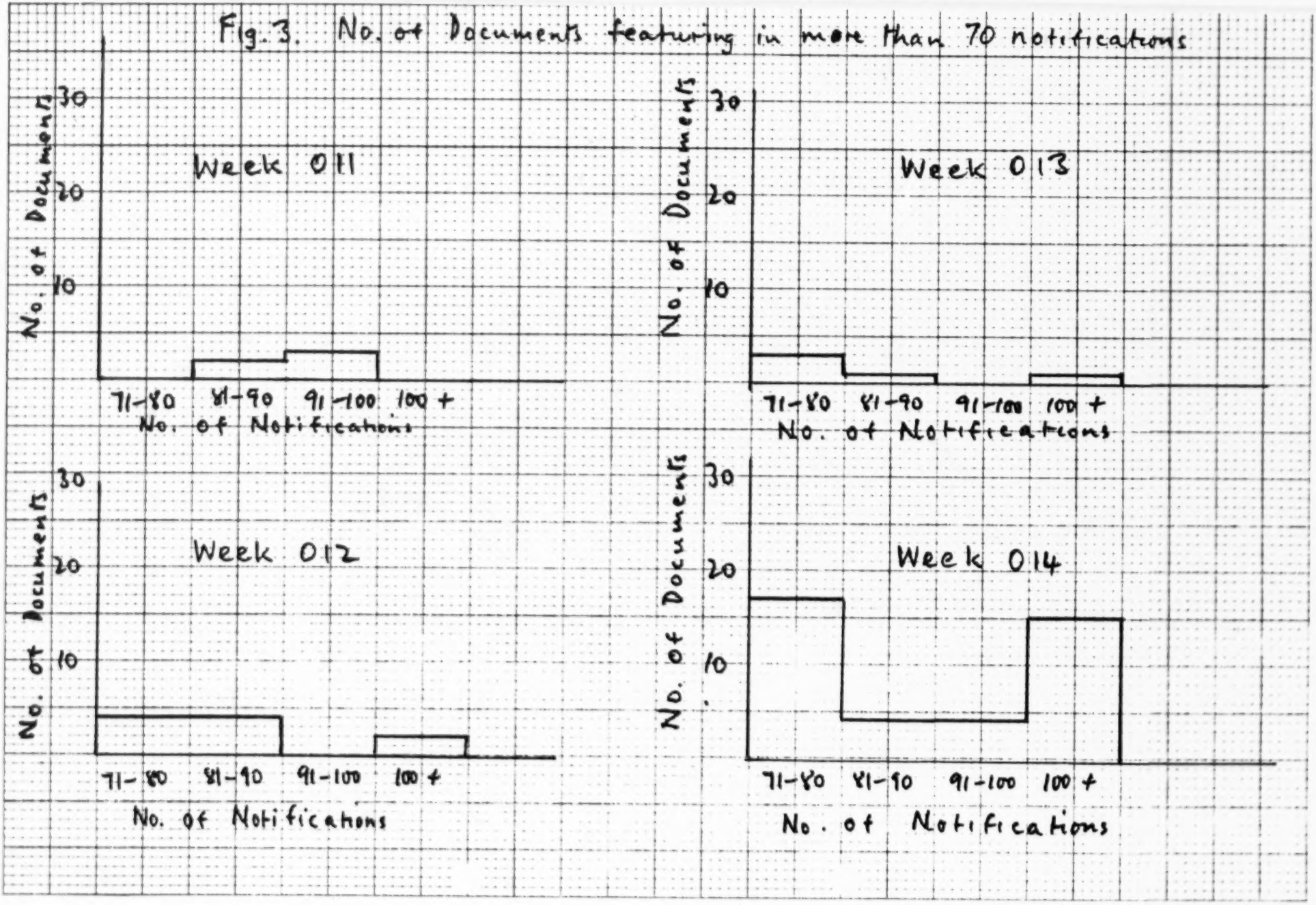


Fig. 3. No. of Documents featuring in more than 70 notifications



Chapter 15

RECALL AND PRECISION FAILURE

An examination of the reasons why relevant documents were not selected by profiles (Recall failure) and why irrelevant items were selected (Precision failure) was made using data from weeks 014 and 023. The material examined for Precision failure comprised documents notified to a sample of 48 users in these two weeks, but marked by them as X (not relevant).

In the study of Recall failure it was decided to analyse those documents in week 023 which the user's profile had failed to select but which he had marked as R1 (highly relevant) on the sample list of documents submitted to him. The number of partially relevant (R2) documents marked was large and would have taken too long to analyse if the same-sized sample of users had been retained.

For the documents of week 014, users had not been asked to differentiate between highly relevant and partially relevant documents and, therefore, only a single relevance marking was available. To reduce the number of documents requiring analysis only a sample of the 014 documents was included. The results of the study were calculated using both the mixture of 023 and 014 documents, and highly relevant 023 documents alone.

Failure Categories

A number of possible reasons for failure were isolated, classified primarily by whether the failure was one of

Recall or Precision, and secondly by whether it was caused by deficiencies in the search profile, in the document indexing, or in the thesaurus. The categories were as follows:

Recall Failures

a) Due to profile

RPF 0 Subject of document is considered to be outside the scope of the user's stated information requirements. Cannot truly be considered a failure of the system.

RPF 1 Document obviously falls within the user's stated requirements. Search profile is defective.

RPF 2 Document deals with a subject which might reasonably, particularly with the benefit of hindsight, have been assumed to fall within user's requirements.

RPF 3 Subject of document falls within the user's stated requirements but the particular requirement is so general or vague that it was deliberately omitted in view of likely adverse effect on Precision.

RPF 4 Other causes of failure, e.g. logic statement of the search profile is too restrictive to select the document.

b) Documenting indexing failures

RIF 1 Failure to index a concept which is obviously present and important in the document.

RIF 2 Failure to index a concept which can be seen to be present when studied in the light of a particular user's interests.

RIF 3 Failure to apply automatic 'posting-up' to a Broader Term as laid down for certain terms.

RIF 4 Other indexing failures.

c) Thesaurus

RTF The particular index term assigned to the document was added to the Thesaurus after the last updating of the profile.

Precision failures.

a) Due to profile

PPF 0 Document appears to meet the user's stated requirements. Further communication with user is needed to discover his reason for marking it non-relevant.

PPF 1 Document retrieved by false co-ordination ie. combination of terms specified in profile has unexpectedly selected irrelevant document.

PPF 2 Deliberate loosening of profile, intended to secure good Recall performance, has caused expected Precision failure.

PPF 3 Other profile failure.

b) Document indexing

PPF 0 Poor indexing eg. misunderstanding of subject of document; use of wrong index term.

PPF 1 Over-zealous indexing. Indexer has included minor aspects of the document in his indexing.

PIF 2 Automatic posting-up to more general term has caused retrieval of an unwanted fringe document.

c) Thesaurus

PTF

Index term available is too wide and does not allow distinction to be made between relevant and irrelevant concepts.

Analysis

A total of 199 documents from weeks 014 and 023 were analysed for Recall failure and 133 for Precision failure. The sample of R1 documents for week 023 contained 59 for Recall failure analysis and 93 for Precision failure analysis.

The results are shown in Figs. 1 and 2.

An alternative method of analysing the results was used which involved looking at the failures and assigning them to the following categories:

1) Failure of user-system interaction

2) Operator error or deficiency.

3) Swings and roundabouts effect caused by the inverse relationship between Recall and Precision.

4) Thesaurus/system

Each of the RPF, PPF etc. categories was examined and assigned to whichever of the above four categories seemed most closely related. The results of this reclassification are shown in Fig. 3.

Results and Conclusions

The relatively small number of failures analysed in the study and the fact that they are drawn from two weeks means that the values for each type of failure may not be entirely typical for the system as a whole. However, it can be clearly seen from figures 1 and 2 that failure in both Recall and Precision is overwhelmingly associated with the search profiles. The fact that almost 40 percent of Recall failures could be attributed to documents marked by the user as relevant being considered outside the scope of the user's information requirements, presupposes a considerable gap between the user's view of his requirements, the subjects of the documents he marks as relevant, and the SDI staff's idea of his requirements. On the other hand it is not likely that the problem arises simply through too narrow an interpretation by the SDI staff of the user's requirements. Rather it must be considered a general fault of the system.

The philosophy adopted in profile compilation was to treat the user's information requirements as a whole, rather than to ask him to restrict himself to one or two highly specific aspects. It was felt that the sort of specific search request put forward by a user to a retrospective searching system may not be the form to represent his continuing need for current-awareness information. If one assumes that his current-awareness needs will be more general than his retrospective search request and will have a core of highly specific interests surrounded by outer layers of more general and less-defined interests, then a problem arises - what portion of these interests should an SDI profile attempt to cover.

One common approach is to concentrate on the highly specific core interests. This tends to produce a well-defined search profile of the same type as the retrospective search request. This of course works well for people e.g. research scientists who are working on a highly specific area but may be less satisfactory for the engineer who may need a variety of

information on different aspects of a number of fields. The basic problem is that it is very difficult to arrive at the pure statement of the user's real needs since he normally has to be guided on the method of presenting his needs to the system. The examples provided to him force him to adopt a particular view of his requirements which may or may not reflect his own view. Thus the information requirements of users of the INSPEC SDI service were of an entirely different type from those expressed by, for example, the users of the UKCIS service (ignoring the obvious difference of subject).

It could be argued that the information requirements statement given by INSPEC users reflected more nearly their full needs, but this can only be considered a virtue where the system serves these needs satisfactorily.

A consequence of the attempt to cover the full range of information requirements of a user is that a document marked relevant by a user must be considered relevant to his information requirements, and therefore, failure to retrieve it must be considered a real failure which although it can be explained by the fact that the particular concept was not mentioned in his statement of information requirements, cannot be ignored in assesing the performance of a system which aims to cover his complete range of interests.

It is clear that a system which attempts to serve the full needs of a user, ranging from the very specific core interests to the general fringe interests, and tries to adapt to changes in these interests, must allow much more direct and rapid interaction between tha user and the system that was possible in the Investigation or in most current SDI systems.

The compromise in most cases is to settle for some narrower section of the user's requirements which can be more easily dealt with by present systems. The result is that most SDI systems operate in the same way as retrospective search systems, the only difference being that the search is repeated regularly over the relatively small number of documents being added each week to the data base.

Most of the failures of the INSPEC SDI system appear to follow directly from this attempt to cover the wide range of a user's requirements in a single profile. The biggest single cause of Recall failure is RPF 0 - documents considered to be outside the stated requirements, while the next most important, RPF 1, is failure to retrieve documents which might just conceivably be considered to fall within the scope of the user's requirements. Only some five percent of failures were considered to relate to documents which obviously coincided with the user's stated requirements.

On the Precision side, the PPF 2 failures may be attributed to the factors related to the general nature of the information requirements of users and the fact that relevance assessments used for calculation of Recall performance were generally done by users without direct reference to their stated requirements.

In sum, therefore, it would appear that the vast majority of failures of the system derive from the general nature of the users information requirements and the problem of obtaining consistent relevance assessment in such circumstances.

Other types of failure are by comparison small in number. This does not of course mean that the corresponding aspects of this system are necessarily better than in other systems, since the study is concerned only with the major cause of failure in each case and the profile aspects may cover instances of other types of failure.

Fig 1 Recall and Precision failure analysis for sample of documents for weeks 014 and 023

Recall failure category	No. of articles	% of total	Precision failure category	No. of articles	% of total
RPF 0	75.5	38	PPF 0	22.5	17
1	5	3	1	7	5
2	55	28	2	37.5	28
3	55.5	28	3	44	33
4	2	1			
RIF 1	1.5	1	PIF 1	8	6
2	3	2	2	6	5
3	-		3	3	2
4	-				
RTF	1.5	1	PTF	5	4
TOTAL	199	102	TOTAL	133	100

Fig 2 Recall and Precision failure analysis for sample of documents input to week 023

Recall failure category	No. of articles	% of total	Precision failure category	No. of articles	% of total
RFP 0	23	39	PPF 0	17	18
1	3	5	1	6	7
2	20.5	35	2	27	29
3	10	17	3	29.5	32
4	-				
RIF 1	1	2	PIF 1	5	6
2	1	2	2	2.5	3
3			3	3	3
4					
RTF	0.5	1	PTF	3	3
TOTAL	59	101	TOTAL	93	101

Fig 3 Recall and Precision failure - examination of 152 documents input to week 023

User-System interaction RPF 0: PPF 0:			Operator error, deficiency RPF 1/2, RPF 4, RIF 1-4 PPF 3, PIF 1/2			Swing-Round-abouts RPF 3: PPF 2			Thesaurus-System RTF: PPF 1: PIF 3 PTF		
	No.	%		No.	%		No.	%		No.	%
RPF 0	23		RPF 1	3		RPF 3	10		RFT	0.5	
PPF 0	17		RPF 2	20.5		PPF 2	27		PPF 1	6	
			RIF 1	1					PIF 3	3	
			RIF 2	1					PTF	3	
			PPF 3	29.5							
			PIF 1	5							
			PIF 2	3.5							
TOTAL	40	26	TOTAL	62.5	41	TOTAL	37	25	TOTAL	12.5	8

Chapter 16

PRECISION PERFORMANCE OF THE SDI SERVICE

Throughout the SDI Investigation, users were asked to return relevance assessments for all documents notified to them. They did so by marking one copy of the notification form with a 1, 2, or X against each document number and returning it to INSPEC.

The relevance categories were assigned the following meanings:-

1 - Highly relevant i.e. documents such that the user would wish his profile to select all similar items

2 - partially relevant i.e. documents of interest to the user but not of such direct importance that he would be concerned if a proportion were not selected by his profile

X - not relevant i.e. documents of so little relevance or interest that the user would not wish his profile to select them.

It can be argued that three categories is either too many or too few. A number of users from time to time urged the need for finer distinction. They were told that there was no objection to their adopting a greater number of relevance classes provided only that they explained the basis of their classification so that proper use could be made of the assessments in profile analysis and modification. No user in fact took up this offer.

On the other hand very few users made the case for a simple relevant/not relevant classification possibly because they could in any case adopt this for themselves.

Some users in fact appear to have used the relevance 2 category so little that they were using a yes/no assessment.

In general the three-category system appears to have been satisfactory for the purposes of the Investigation. Apart from its use in determining the Precision performance of a given profile or the system as a whole, it was also used in profile modification. In general the aim of profile modification was to maximise the number of relevance 1 documents and to minimise the number of not-relevant documents. The relevance 2 documents were treated as largely neutral items whose number was to be maximised as far as was consistent with the preceding major aim.

There is of course a case for the two-category assessment since it can be argued that a user should be able to decide whether he is interested in a given document or not. However this yes/no assessment can cause problems for the staff who may have to reconcile two apparently contradictory assessments on similar documents.

A very high proportion of users regularly sent in relevance returns. This was made easy for them by provision of a second copy of the form and a reply-paid envelope. In addition the importance of the regular feedback was stressed to users and if necessary the ultimate sanction of withholding the service could be imposed. However, taking all these factors into account, the percentage of users sending in returns each week is impressively high.

The figures are shown for some sample weeks in Figure 1. from which it can be seen that the weekly average return was in excess of 90 percent.

Precision figures were calculated in two ways:-

a) Total relevant documents i.e. Relevance 1 and Relevance 2 documents combined, expressed as a percentage of total documents sent. This is sometimes expressed as Precision R1/2 or R1/2 Precision.

b) Relevance 1 documents only, expressed as a percentage of total documents sent. This is expressed as Precision R1 or R1 Precision.

Performance figures were recorded each week for each profile and in general the R1/2 Precision figure was the one adopted. However it became apparent that for some users the relevance 2 documents were of relatively minor interest and a good R1/2 Precision performance figure could hide a very unsatisfactory profile. From week 035 onwards, therefore, both R1 and R1/2

precision figures were recorded. This is not to say that previously the figures were not available for analysis but merely that they had not been set down in a form easily used for profile monitoring.

It had been intended originally to input the raw performance figures for each profile to the computer and to obtain the necessary performance statistics by this means.

However as this part of the SDI programs remained in a very rudimentary and untested state, the task of punching and inputting this data was not carried out as it was not commensurate with the small expected benefit. The performance figures for the system appear in several ways. As mentioned earlier there are two basic sets of figures, relating to relevance 1 and 2 documents combined and to relevance 1 documents only. For the reasons mentioned earlier, while the R1/2 figures are given for the whole of the service period (weeks 011-066) the R1 figures are given only for the period 035-066.

In each case the figures are calculated in two ways which, following Cleverdon, we have called 'Average of numbers' and 'Average of ratios' respectively.

Each gives a slightly different picture of system performance. Average of numbers reflects the performance of the system as though the individual user requirements were amalgamated to form the general requirements of one generalised user and each document retrieved carries equal weight in calculating the Precision figure. Using average of ratios the performance figure represents the sum of the individual performance of each profile and thus perhaps reflects more closely the average satisfaction rate of the service.

Where the average number of documents retrieved by each profile is approximately the same, difference between the two measures is small. However, where there is a mix of users requiring high precision with profiles producing few but largely relevant documents, and other requiring high recall with profiles producing many documents a large proportion of which are non-relevant, the difference in the performance figures calculated by the two methods may be large.

In terms of examining the effect of various parameters on the system, the average of numbers is preferred; but for assessing the success of the service in meeting user needs, average of ratios is considered the best yardstick.

The precision performance of the system, based on R1/2 documents, is tabulated in Figures 2a and 2b for both average of numbers and average of ratios. Graphs of these value are

shown for period 011-038 and 039-066 in Figures 3-6. Similar values based on relevance 1 documents only are shown in Figures 7a and 7b and plotted in Figures 8-9 for weeks 039-066.

In each case the graph is plotted for all (approximately 576) profiles, for those profiles (approximately 105) which remained unmodified throughout the period 011-066, and for the approximate 450 profiles which were modified during this period. It will be seen that the unmodified profiles perform significantly better than the others. This is not particularly surprising since the reason they remained unmodified is, in the majority of cases, due to their satisfactory performance. At the same time, since the superior performance is largely maintained in spite of major modification to the other profiles it would appear that the superior performance is due to some intrinsic quality of the original requirements of the user. Nevertheless there does appear to be a tendency for the margin of superiority to be eroded during the course of the investigation, with the performance of the unmodified profiles gradually dropping towards the somewhat improved level of the modified ones. This fall could well be explained by the user's real requirements moving further away during this time from those stated at the beginning of the investigation.

In Figures 10-12 are plotted the performance figures R1 and R1/2 for all profiles. These show that in the majority of cases the pattern of R1 precision is closely related to that for R1/2 precision.

The single precision figure of course shows only part of the picture andit is of interest to know the distribution of individual profile performance. These are given in a series of tables and graphs showing R1 and R1/2 precision based on average of numbers and average of ratios as follows:-

Figures 13-15	All profiles, R1/2 precision
Figures 16-18	Unmodified profiles, R1/2 precision
Figures 19-21	University profiles, R1/2 precision
Figures 22-24	Government establishment profiles, R1/2 precision
Figures 25-27	Industrial profiles, R1/2 precision
Figures 28-32	All profiles and unmodified profiles R1 precision.

Figure 1. Users receiving notifications and returning assessments.

Week No.	Active Users*	Users receiving notifications		Relevance assessment received	
		No.	%	No.	%
011	576	490	85	452	92
012	569	518		490	
013	572	528		452	
014	568	537		506	
015	568	526		494	
016	568	528		504	
017	570	519	91	491	95
018	569	532		487	
019	567	521		493	
020	565	514		473	
021	564	507		479	
022	560	503	90	475	95
023	567	524		477	
024	565	468		438	
025	563	490		557	
026	561	507		472	
027	561	501	89	469	94
028	561	474		449	
029	560	435		412	
030	559	455		439	
031	559	460	82	447	97
032	552	495		477	
033	554	495		473	
034	552	485		464	
035	545	486		469	
036	543	474	87	450	95

* These figures fluctuate owing to the fact that users classed as inactive start to communicate again. The general trend of course is downwards.

Figure 1. (Contd)

Week No.	Active Users*	Users receiving notifications		Relevance assessment received	
		No.	%	No.	%
037	542	473		456	
038	536	479		449	
039	537	475		447	
040	533	502	94	471	94
041	543	488		449	
042	545	469		443	
043	539	438		397	
044	552	457		421	
045	545	481	88	448	93
046	540	488		440	
047	539	434		395	
048	539	454		408	
049	544	447		411	
050	537	459		421	
051	542	438		402	
052	533	448		412	
053	532	444	83	404	91
054	528	466		432	
055	532	468		430	
056	529	465		421	
057	528	459		410	
058	530	478	90	429	90
059	529	482		434	
060	528	466		424	
061	524	465		416	
062	525	447		390	
063	523	442	85	367	83

PRECISION PERFORMANCE OF SDI PROFILES. - ALL PROFILES. Figure 2a.

Week No.	Users.	Docs. Sent.	Docs. Rel. R1/2	% Precision av. of nos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig.
011	452.	3369.	2375.	70.5	23.3	69.5	29.9023	0.48
012	490.	4310.	3121.	72.4	24.2	71.5	28.9972	2.22
013	452.	4954.	3305.	66.7	24.0	66.5	29.0988	6.44
014	506.	6119.	4260.	69.6	23.4	70.1	26.2277	2.16
Total	550.	18752.	13061.	69.7	19.3	69.5	22.0135	
015	494.	5010.	3396.	67.8	24.9	66.4	29.9780	4.81
016	504.	4741.	3206.	67.6	24.3	67.2	29.5170	4.93
017	491.	4947.	3362.	68.0	26.9	64.8	31.7997	4.51
018	487.	4119.	2777.	67.4	25.6	67.5	30.3043	4.88
Total	545.	18817.	12741.	67.7	20.9	66.5	22.8123	
019	493.	4620.	3327.	72.0	22.9	69.6	28.3596	1.70
020	473.	4380.	3144.	71.8	24.7	68.0	30.7095	1.31
021	479.	4106.	2945.	71.7	26.0	69.4	30.8161	1.19
022	475.	3894.	2730.	70.1	24.9	68.7	29.9496	1.05
Total	540.	17000.	12146.	71.4	20.2	69.0	23.8589	
023	477.	4393.	3054.	69.5	24.4	67.7	29.3717	1.97
024	438.	3016.	2040.	67.6	26.3	67.9	32.7023	3.91
025	457.	2863.	2061.	72.0	25.6	71.1	30.7341	1.30
026	472.	5081.	3564.	70.1	22.4	68.4	27.8060	1.14
Total	528.	15353.	10719.	69.8	19.5	69.3	22.1788	
027	469.	4055.	2898.	71.5	25.3	70.1	29.8743	0.82
028	449.	2512.	1814.	72.2	27.5	72.1	32.7542	1.47
029	412.	1916.	1362.	71.1	27.6	70.7	33.3131	0.20
030	439.	2615.	1838.	70.3	26.7	68.1	34.2071	0.66
Total	517.	11098.	7912.	71.3	21.3	70.5	24.4857	

PRECISION PERFORMANCE OF SDI PROFILES. - ALL PROFILES.

Figure 2a. (contd)

Week No.	Users.	Docs. Sent.	Docs. Rel. R1/2	% Precision av. of nos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig.
031	447.	3461.	2490.	71.9	25.2	71.0	31.0538	1.38
032	477.	4369.	3310.	75.8	23.0	74.9	27.6957	7.10
033	473.	5218.	3723.	71.3	23.7	71.5	28.6264	0.75
034	464.	4170.	2971.	71.2	23.7	69.3	28.9023	0.52
Total	528.	17218.	12494.	72.6	19.9	71.4	23.6284	
035	469.	4463.	3319.	74.4	23.6	72.0	29.6007	5.13
036	450.	3352.	2380.	71.0	26.1	68.6	31.6534	0.16
037	456.	3913.	2931.	74.9	23.1	71.8	29.3319	5.54
038	449.	3813.	2769.	72.6	25.2	72.5	30.0188	2.37
Total	517.	15541.	11399.	73.3	20.0	71.6	23.2018	
039	447.	3852.	2780.	72.2	24.1	71.8	28.9190	1.76
040	471.	4868.	3533.	72.6	23.1	71.9	27.8403	2.61
041	449.	4021.	2839.	70.6	24.4	69.6	30.3702	0.37
042	443.	2772.	1928.	69.6	26.8	67.0	32.1859	1.53
Total	508.	15513.	11080.	71.4	20.2	70.5	22.3285	
043	397.	1831.	1303.	71.2	28.6	69.3	35.3905	0.27
044	421.	2716.	1976.	72.8	26.6	69.8	32.5422	2.15
045	448.	3494.	2535.	72.6	24.6	68.2	30.8994	2.18
046	440.	3225.	2378.	73.7	24.1	72.6	29.9782	3.57
Total	511.	11266.	8192.	72.7	20.3	70.4	24.7554	
047	395.	2701.	1899.	70.3	27.4	67.5	34.3496	0.65
048	408.	2541.	1907.	75.0	25.4	72.9	31.5212	4.63
049	411.	2467.	1683.	68.2	28.2	64.0	35.0823	2.90
050	421.	2965.	2130.	71.8	24.6	69.9	30.9608	1.15
Total	490.	10674.	7619.	71.4	20.9	69.1	24.8158	

PRECISION PERFORMANCE OF SDI PROFILES. - ALL PROFILES. Figure 2a. _____ (Contd)

Week No.	Users.	Docs. Sent.	Docs. Rel. R1/2	% Precision av. of nos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig.
051	402.	2182.	1513.	69.3	27.1	67.0	33.3271	1.57
052	412.	3338.	2359.	70.7	26.0	68.8	31.6988	0.26
053	404.	2930.	2134.	72.8	25.7	72.3	30.7980	2.33
054	432.	3166.	2258.	71.3	23.9	68.4	30.8458	0.55
Total	495.	11616.	8264.	71.1	20.5	69.2	24.6007	
055	430.	3557.	2520.	70.8	23.7	69.3	29.2993	0.03
056	421.	3625.	2473.	68.2	25.3	62.6	33.4612	3.51
057	410.	3577.	2511.	70.2	24.3	68.1	30.3067	0.89
058	429.	3737.	2520.	67.4	25.5	66.1	30.1133	4.63
Total	488.	14496.	10024.	69.2	20.6	65.6	25.0590	
059	434.	3654.	2586.	70.8	23.7	68.8	29.1787	0.13
060	424.	3888.	2860.	73.6	23.1	70.8	29.2051	3.68
061	416.	3260.	2364.	72.5	24.2	69.2	31.5037	2.06
062	390.	3013.	2125.	70.5	24.6	67.8	31.7885	0.42
Total	477.	13815.	9935.	71.9	18.7	69.0	22.3680	
063	367.	2614.	1773.	67.8	25.4	64.9	31.7583	3.43
064	367.	4047.	2865.	70.8	24.0	69.0	28.3408	0.11
065	343.	2869.	2094.	73.0	24.5	68.9	31.3161	2.48
066	357.	2562.	1738.	67.8	25.8	65.8	32.3689	3.38
Total	442.	12092.	8470.	70.0	20.0	67.3	24.1785	
Sub Total	542.	105013.	74983.	71.4	17.5	68.9	19.4737	
Grand Total	576.	203251.	144056.	70.9	16.5	68.2	18.2878	

Figure 2b.

Year ac.	Users.	Issue. Sent.	Issue. Rec. 21/2	% Precision av. of nos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig
011	119.	927.	740.	80.8	17.1	78.9	22.7468	2.45
012	129.	1164.	982.	84.4	14.8	83.8	19.9296	5.65
013	112.	1216.	969.	79.7	17.5	80.2	21.4015	1.88
014	133.	1615.	1245.	77.1	20.9	76.1	22.3323	0.33
Total	143.	4922.	3945.	80.2	13.6	78.9	15.8365	
015	124.	1247.	991.	79.5	20.1	74.7	26.8758	1.72
016	126.	1181.	935.	79.2	18.9	77.5	24.1841	1.42
017	128.	1336.	1046.	78.3	22.7	72.1	29.4942	0.75
018	129.	992.	775.	78.1	20.9	76.5	26.7035	0.52
Total	141.	4756.	3747.	78.8	15.7	76.0	18.1875	
019	134.	1294.	1016.	78.5	18.3	76.0	24.8258	0.93
020	127.	1209.	963.	79.7	21.1	76.3	27.1245	1.84
021	130.	1128.	925.	82.0	20.3	78.4	26.6337	3.67
022	126.	947.	750.	79.2	19.0	76.2	25.2922	1.29
Total	140.	4578.	3654.	79.8	15.4	77.3	18.8099	
023	125.	1060.	818.	77.2	20.2	75.2	25.8889	0.20
024	113.	753.	578.	76.8	20.5	74.9	30.0877	0.44
025	122.	717.	571.	79.6	22.0	79.5	25.9103	1.41
026	127.	1449.	1149.	79.3	17.1	77.8	20.9185	1.69
Total	140.	3979.	3116.	78.3	15.2	76.8	16.9106	
027	123.	1133.	868.	76.6	22.9	74.1	26.4244	0.66
028	122.	694.	549.	79.1	23.6	77.7	28.1735	1.05
029	107.	486.	364.	74.9	23.5	75.5	29.6836	1.33
030	122.	786.	629.	80.0	20.8	78.2	26.0906	1.73
Total	134.	3099.	2410.	77.8	17.6	76.3	20.1672	

Figure 2b.
(Contd)

Week No.	Users.	Docs. Sent.	Docs. Rel. R1/2	% Precision av. of nos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig
031	126.	964.	766.	79.5	21.6	80.2	25.3041	1.50
032	126.	1175.	970.	82.6	19.8	81.6	23.8805	4.19
033	128.	1444.	1109.	76.8	21.2	77.8	25.4359	0.57
034	125.	1258.	968.	76.9	21.9	75.8	26.9566	0.41
Total	142.	4841.	3813.	78.8	17.7	78.5	20.9362	
035	126.	1191.	964.	80.9	18.6	77.3	25.3020	2.89
036	121.	899.	707.	78.6	24.1	74.2	30.3130	0.86
037	123.	2239.	908.	80.4	20.3	78.1	26.9025	2.40
038	123.	1038.	839.	80.8	20.9	78.8	27.1610	2.61
Total	140.	4257.	3418.	80.3	16.7	78.3	20.1915	
039	119.	1048.	803.	76.6	24.5	76.6	27.5582	0.62
040	128.	1418.	1092.	77.0	20.8	77.8	24.0327	0.38
041	123.	1142	893.	78.2	21.1	77.0	27.2322	0.61
042	122.	805.	601.	74.7	26.8	70.9	33.5244	1.88
Total	135.	4413.	3389.	76.8	19.2	76.5	20.9898	
043	104.	449.	330.	73.5	28.8	68.8	36.8349	1.99
044	116.	816.	638.	78.2	23.9	74.5	30.4360	0.51
045	118.	980.	780.	79.6	21.0	74.9	27.7741	1.61
046	119.	835.	651.	78.0	24.8	72.9	33.4407	0.36
Total	136.	3080.	2399.	77.9	19.0	74.5	23.6574	
047	102.	772.	558.	72.3	25.0	72.5	30.2536	3.42
048	111.	774.	596.	77.0	25.4	76.7	29.6370	0.28
049	102.	663.	479.	72.2	26.3	65.7	33.9938	3.19
050	104.	740.	553.	74.7	25.4	71.1	30.5163	1.75
Total	131.	2949.	2186.	74.1	20.1	73.2	24.5328	

FILMED FROM BEST AVAILABLE COPY

Figure 2b.
(Contd)

Item No.	U. Corr.	Loss. Sent.	Loss. Rel. R1/2	% Precision av. of mos.	Stand. Dev.	% Precision av. of %	Stand. Dev.	Sig
051	116.	610.	449.	73.6	24.8	71.3	31.9451	2.26
052	116.	936.	699.	74.7	23.6	70.9	28.8928	2.01
053	106.	817.	605.	74.1	27.0	73.3	31.3611	2.31
054	112.	917.	699.	76.2	22.6	70.6	30.8715	0.87
Total	131.	3280.	2452.	74.8	19.6	73.5	22.0013	
055	113.	978.	743.	76.0	23.7	74.8	26.3671	1.09
056	110.	952.	685.	72.0	25.5	64.5	32.8315	4.04
057	110.	1040.	789.	75.9	22.6	73.0	26.7625	1.20
058	114.	987.	698.	70.7	23.6	72.0	25.3391	5.04
Total	133.	3957.	2915.	73.7	20.4	70.9	23.4821	
059	112.	1001.	757.	75.6	20.7	73.5	25.6252	1.36
060	113.	1116.	883.	79.1	19.2	76.2	24.8138	1.34
061	112.	860.	651.	75.7	25.1	69.9	31.9425	1.21
062	101.	837.	612.	73.1	23.8	73.4	29.8461	2.98
Total	127.	3814.	2903.	76.1	18.0	74.1	20.7468	
063	96.	734.	527.	71.8	25.5	69.3	29.8449	3.65
064	87.	1000.	751.	75.1	23.2	74.3	24.5144	1.76
065	85.	750.	569.	75.9	24.4	68.6	33.1917	1.02
066	90.	677.	461.	68.1	25.4	66.4	30.7999	5.81
Total	114.	3161.	2308.	73.0	20.7	71.2	23.4322	
Sub Total	142.	28911.	21970.	76.0	17.1	74.2	17.9887	
Grand Total	145.	55986.	42655.	77.4	14.7	76.0	15.7362	

Fig. 3. Precision performance of SDI profiles - Relevance 1 and 2 documents
(average of numbers)

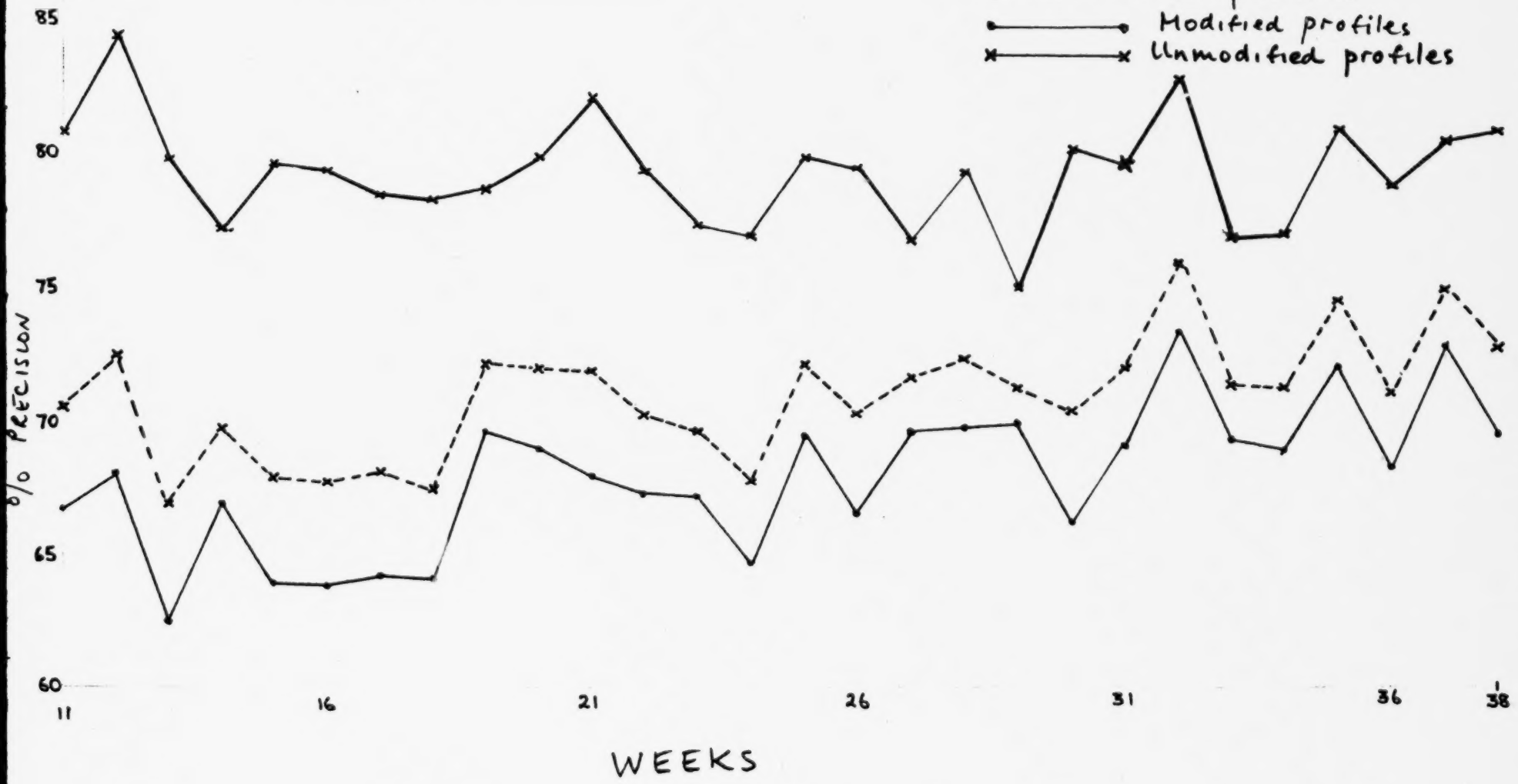
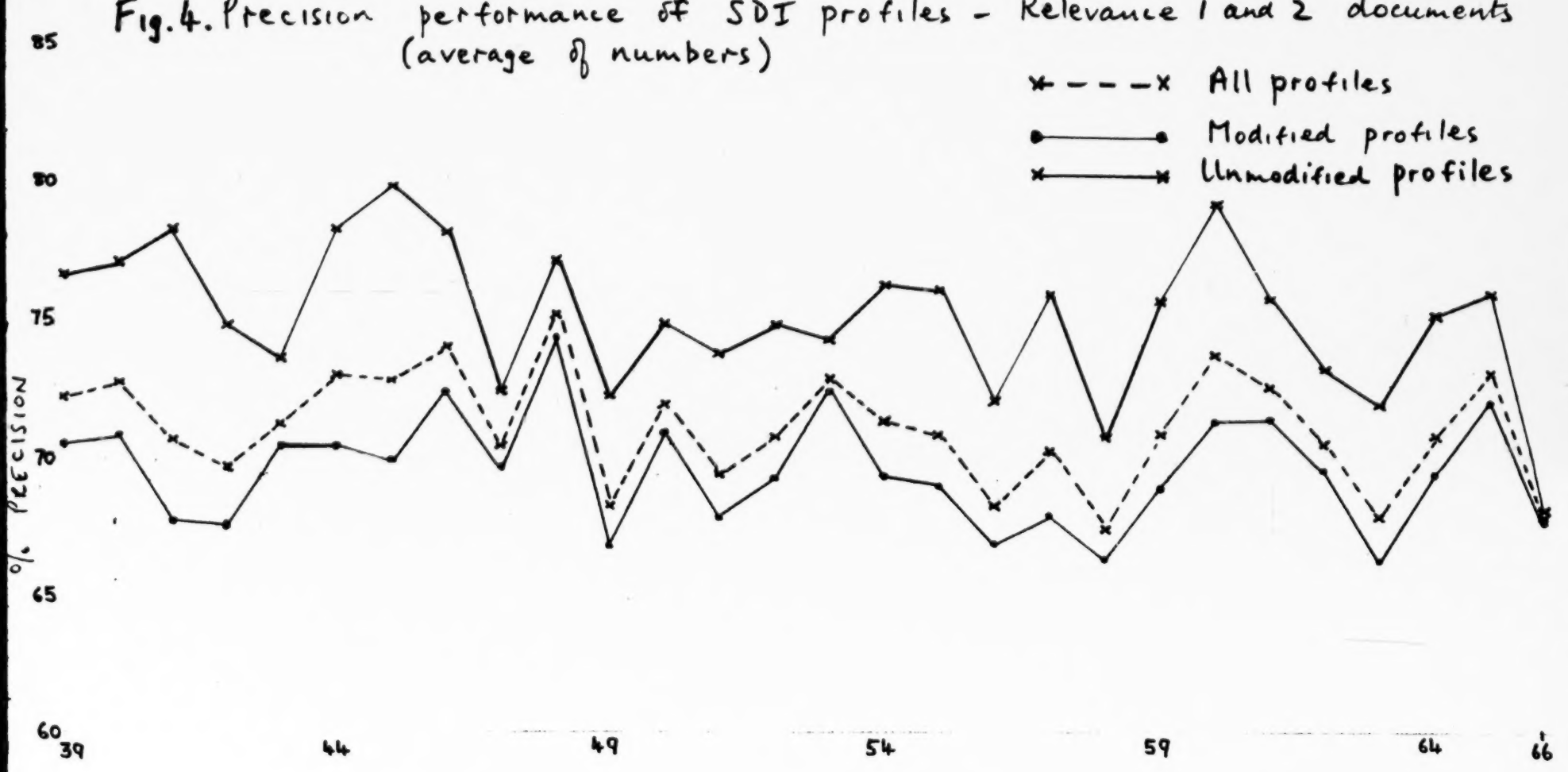


Fig. 4. Precision performance of SDI profiles - Relevance 1 and 2 documents (average of numbers)



16-11

Fig. 5. Precision performance of SDI profiles - Relevance 1 and 2 documents
(average of ratios)

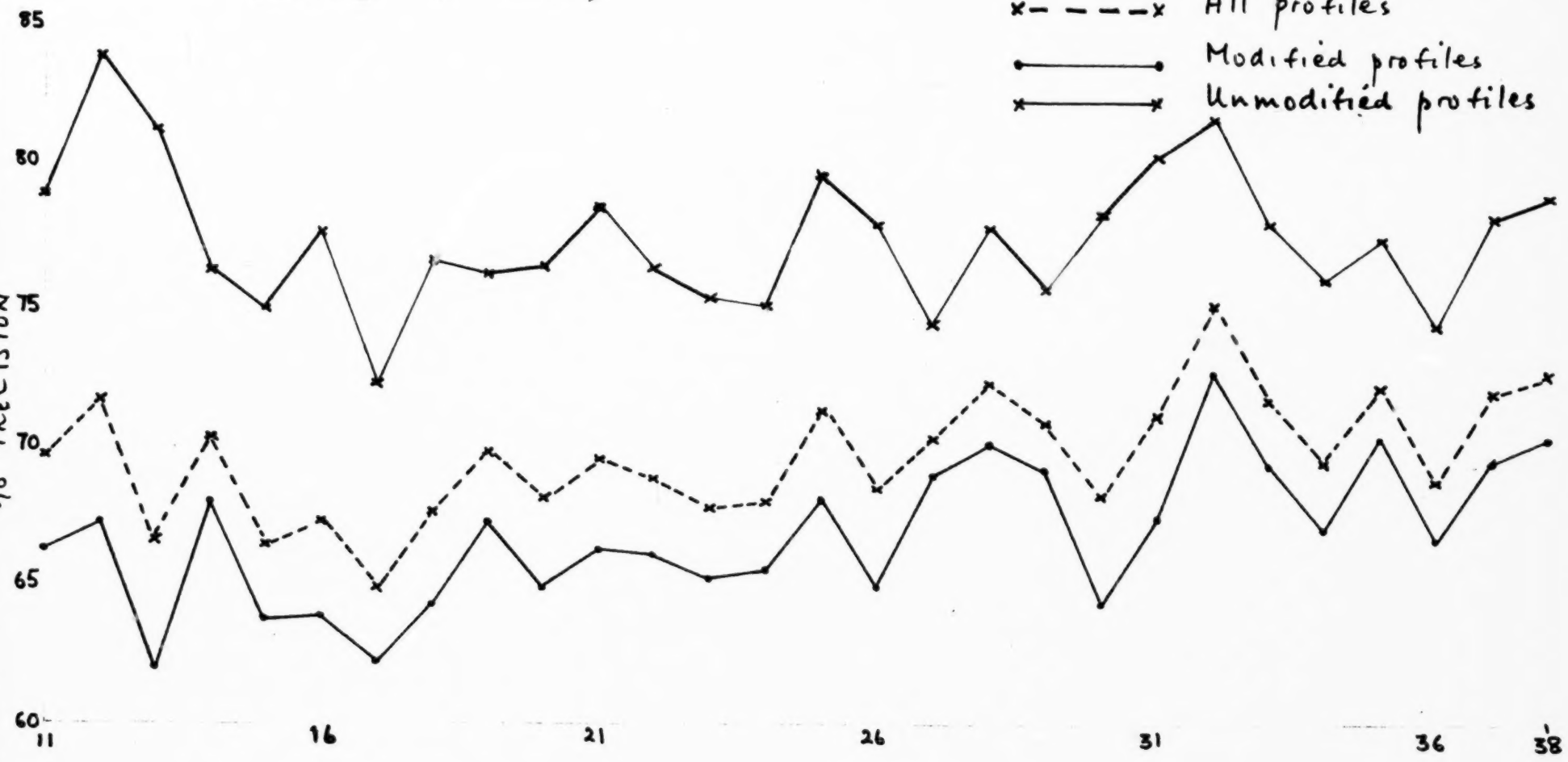


Fig. 6. Precision performance of SDI profiles - Relevance 1 and 2 documents (average of ratios)

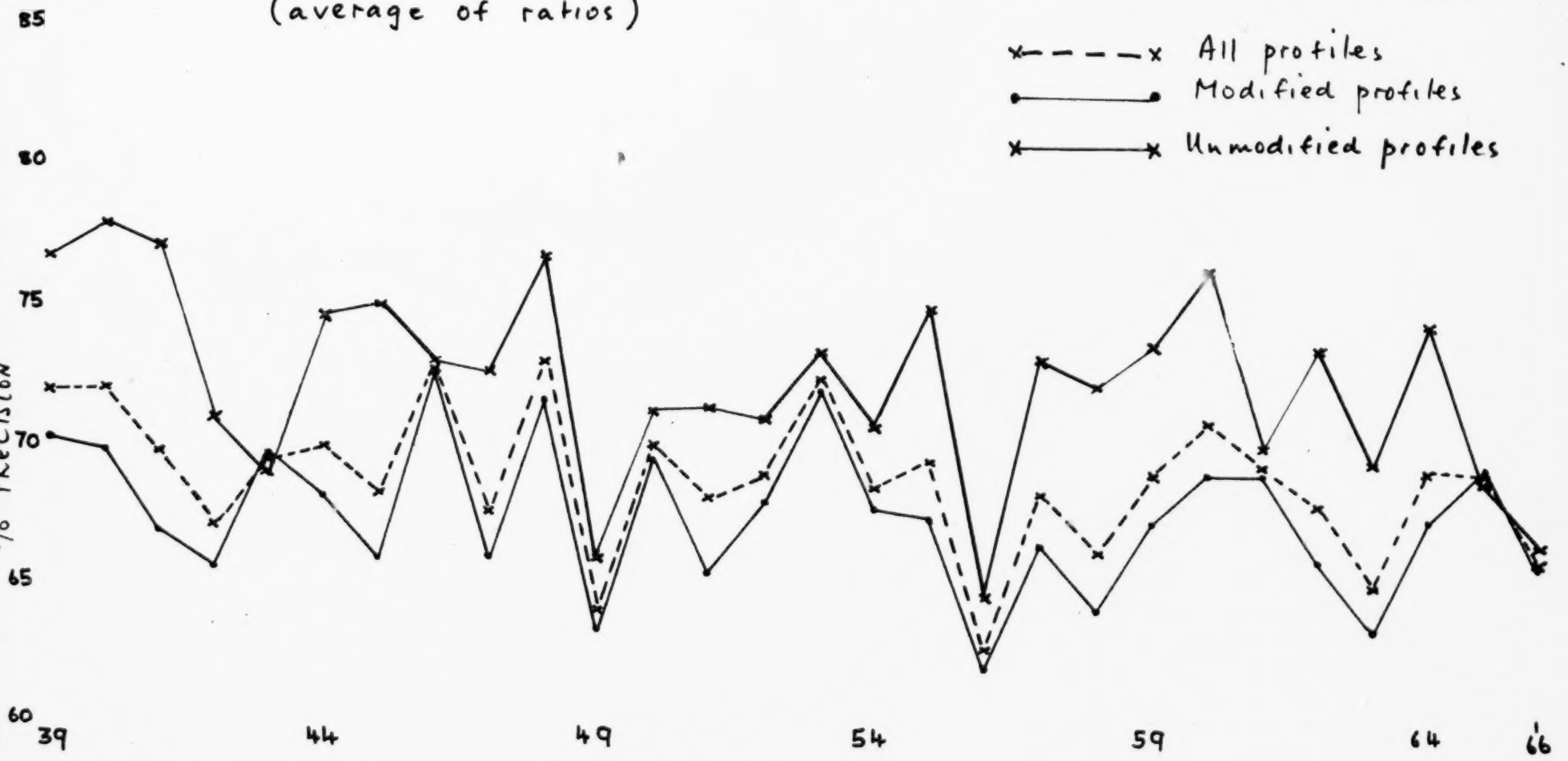


Fig. 8. Precision performance of SDI profiles - Relevance 1 documents
(average of numbers)

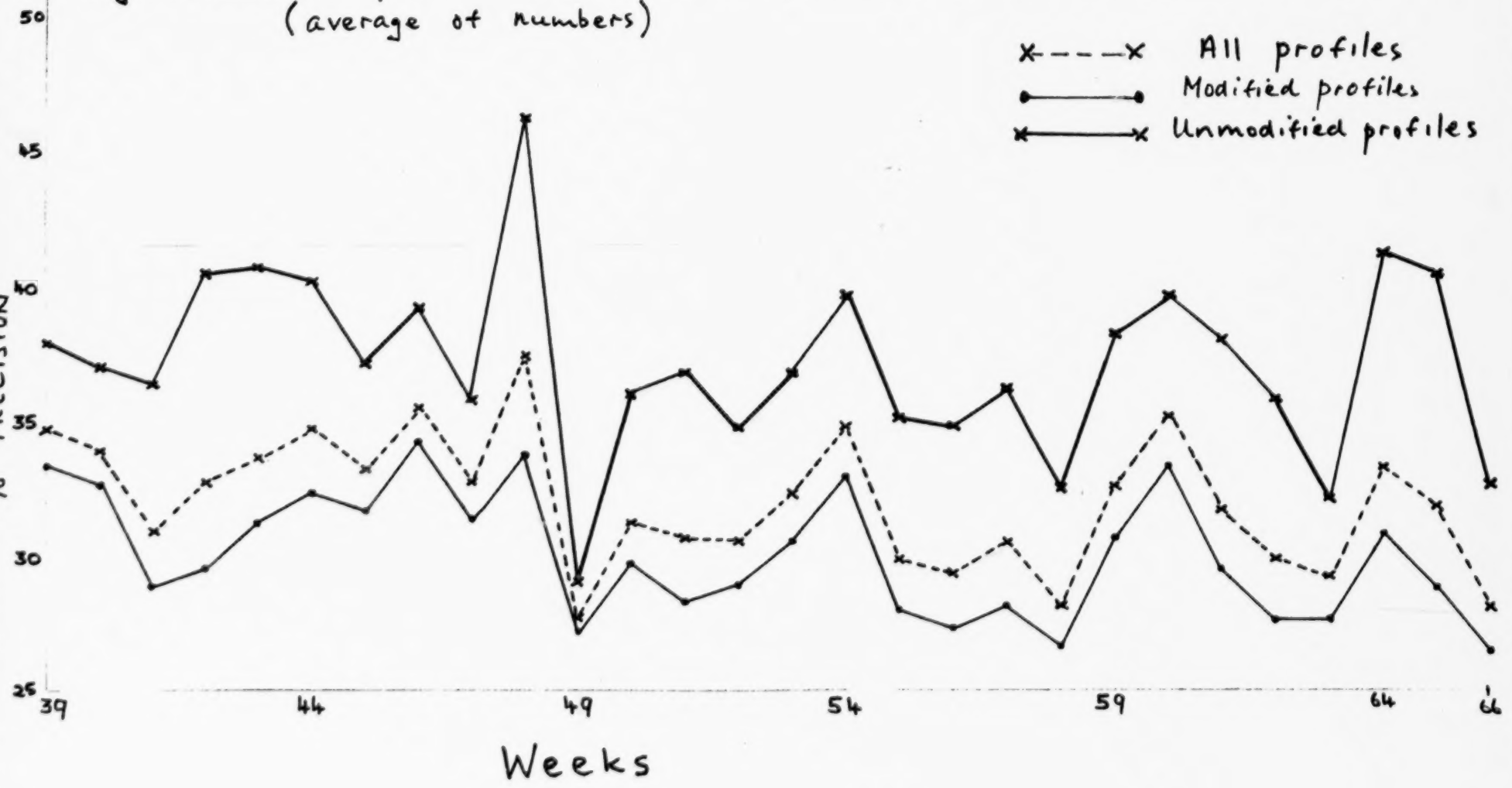


Figure 7a. Precision performance R1 of SDI profiles over the period 035-066 - all profiles.

Week No.	Average of Nos.	Stand.Dev.	Average of ratios	Stand.Dev.
035	35.4	26.7	35.6	31.7
036	35.3	27.1	32.7	30.9
037	36.5	27.5	33.7	31.2
038	33.3	25.0	35.6	30.8
TOTAL	35.2	21.9	34.1	24.7
039	34.7	26.8	34.0	30.5
040	33.9	26.1	33.3	29.7
041	30.9	23.7	31.7	29.4
042	32.7	26.4	30.8	30.2
TOTAL	33.1	21.4	32.8	23.2
043	33.6	29.9	32.3	34.9
044	34.7	27.7	32.7	33.1
045	33.2	25.9	30.9	30.1
046	35.5	26.7	34.3	31.7
TOTAL	34.3	21.7	32.8	24.2
047	32.7	27.0	29.4	32.7
048	37.4	28.1	34.8	32.4
049	27.7	26.8	26.1	32.0
050	31.2	26.8	32.3	31.2
TOTAL	32.2	22.3	31.2	25.0
051	30.6	27.5	28.3	31.7
052	30.5	26.5	28.4	30.4
053	32.3	28.6	33.4	34.7
055	34.8	26.2	33.2	30.8
TOTAL	32.2	22.3	30.4	24.0

Figure 7a. (Contd)

Week No.	Average of Nos.	Stand.Dev.	Average of ratios	Stand.Dev.
055	29.9	24.0	28.7	27.3
056	29.4	24.3	25.7	27.4
057	30.5	23.5	30.7	28.9
058	28.1	23.6	27.7	28.3
TOTAL	29.5	20.2	29.1	23.6
059	32.6	23.7	32.2	29.4
060	35.1	26.6	32.8	29.7
061	31.7	25.3	30.8	31.1
062	29.9	25.1	28.8	31.3
TOTAL	32.5	20.6	31.2	22.6
063	29.2	24.6	28.1	29.5
064	33.3	26.2	30.2	29.1
066	31.8	26.1	27.8	30.1
066	28.1	25.5	28.0	29.7
TOTAL	30.9	21.4	29.3	23.7
GRAND TOTAL	32.5	19.0	31.5	19.2

Figure 7b. PRECISION PERFORMANCE R1 OF SDI PROFILES OVER THE PERIOD 035-066 - Modified profiles

Week No.	Average of Nos.	Stand.Dev.	Average of ratios	Stand.Dev.
035	42.2	27.5	41.8	30.5
036	43.1	29.0	36.3	32.2
037	44.6	30.0	42.1	33.9
036	38.2	26.6	38.9	30.9
TOTAL	42.1	24.2	39.5	25.7
039	37.9	28.8	36.3	30.6
040	37.0	26.8	36.6	28.8
041	36.4	25.6	36.4	30.2
042	40.5	29.4	38.2	31.9
TOTAL	37.7	23.6	36.9	23.2
043	40.7	30.2	36.1	36.5
044	40.1	30.0	34.0	32.7
045	37.1	27.1	34.2	30.7
046	39.1	28.7	36.9	32.4
TOTAL	39.0	23.7	35.3	23.9
047	35.8	30.6	34.2	34.9
048	46.3	29.3	42.5	32.3
049	29.0	26.6	25.2	30.9
050	36.0	31.3	36.1	32.7
TOTAL	36.9	25.2	35.2	26.3
051	36.7	31.6	35.7	35.4
052	34.7	30.3	28.2	29.9
053	36.7	31.1	37.7	35.8
055	39.6	26.8	35.7	28.9
TOTAL	36.9	25.4	34.3	24.2
055	35.1	27.3	33.1	27.9
056	34.8	29.1	28.9	29.2
057	36.3	26.3	37.6	30.2
058	32.5	28.6	33.3	30.8
TOTAL	34.7	24.9	35.3	27.4
059	38.2	26.0	39.1	29.6
060	39.6	27.8	35.5	28.3
061	38.0	28.5	32.4	31.5
062	35.9	29.2	35.9	33.3
TOTAL	38.0	23.7	36.3	24.4

Figure 7b (contd)

Week No.	Average of Nos.	Stand.Dev.	Average of ratios	Stand.Dev.
063	33.1	28.6	31.4	30.4
064	41.2	30.0	39.3	31.6
065	40.5	31.3	31.2	33.2
066	32.7	38.4	32.4	30.7
TOTAL	37.2	26.3	34.5	25.8
GRAND TOTAL	37.9	22.5	36.2	20.3

Fig. 9. Precision performance of SDI profiles - Relevance 1 documents
(average of ratios)

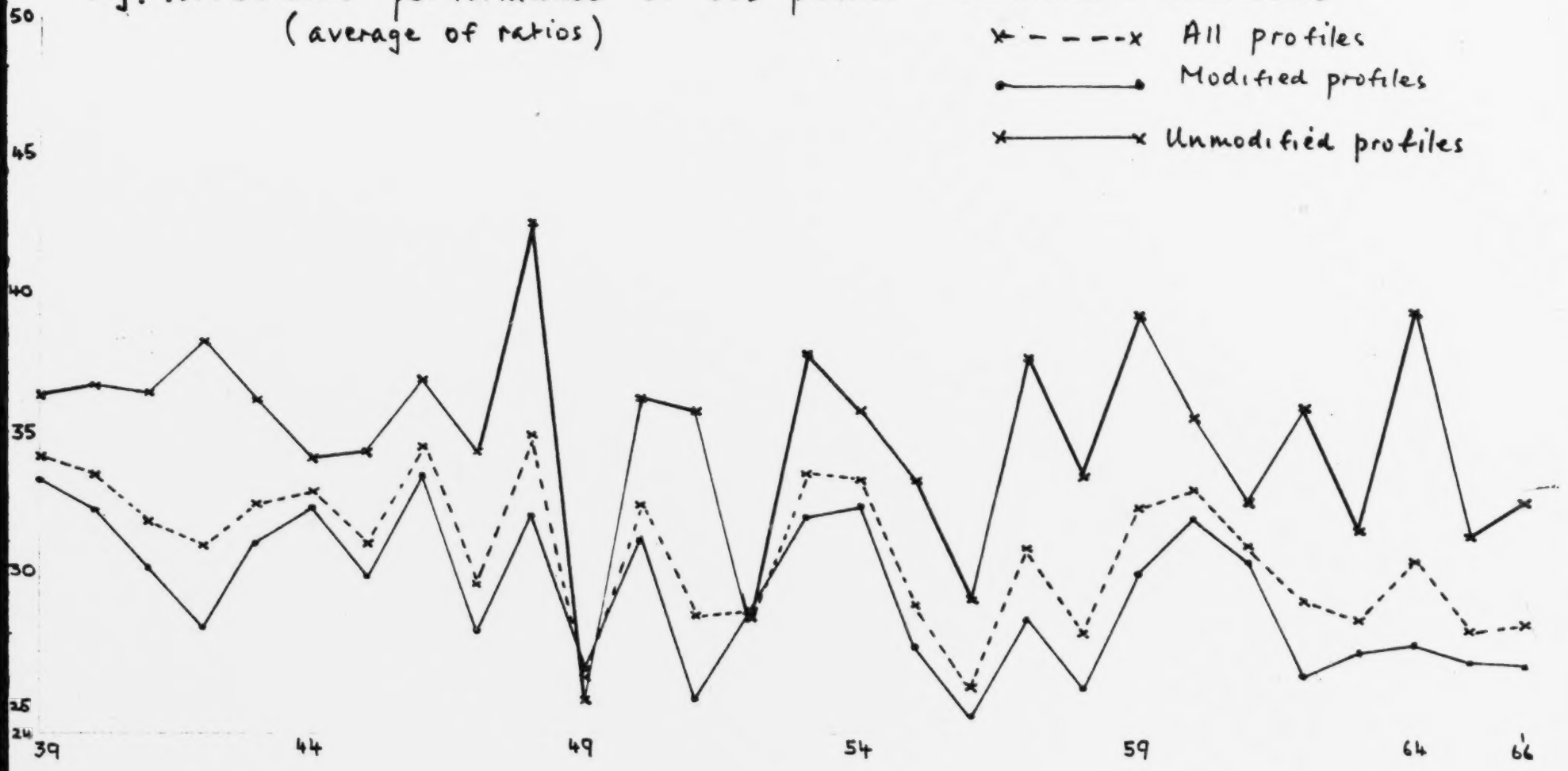
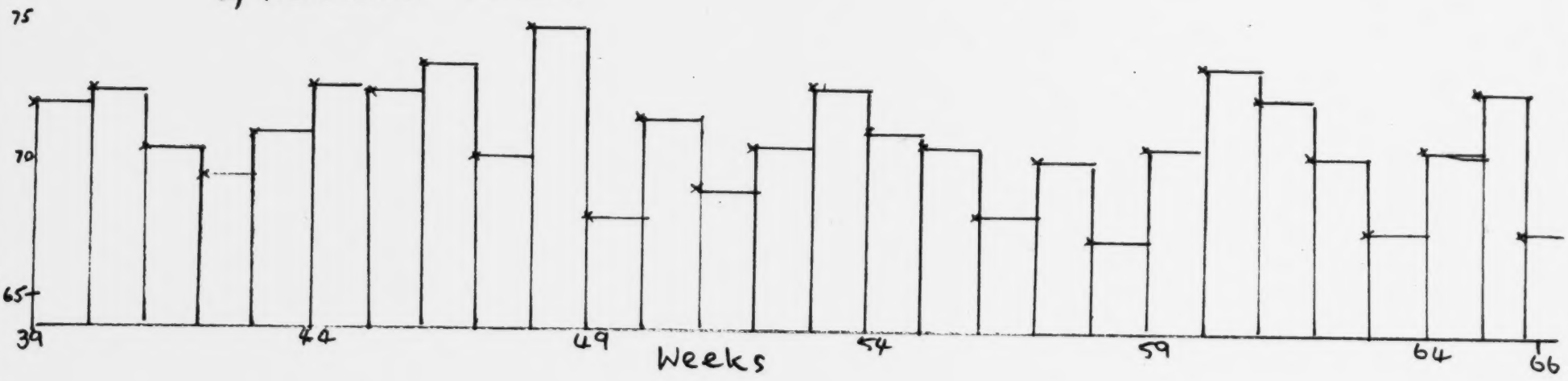


Fig .10. SDI profile performance - Precision (average of numbers)

a) Relevance 1 and 2



b) Relevance 1 only

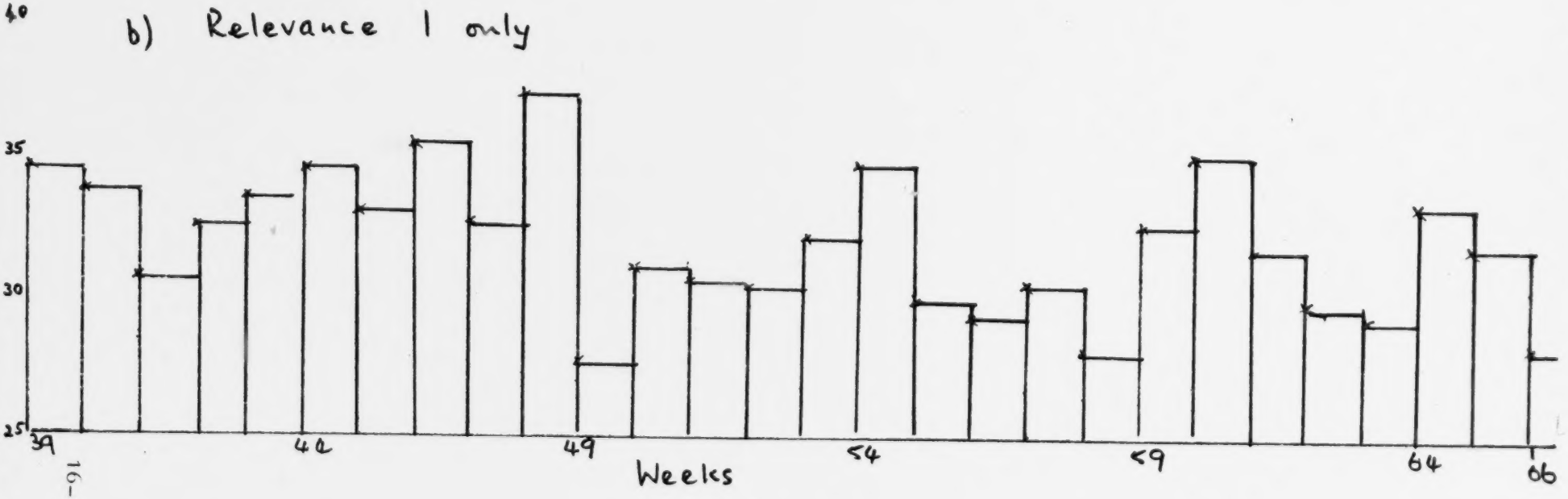
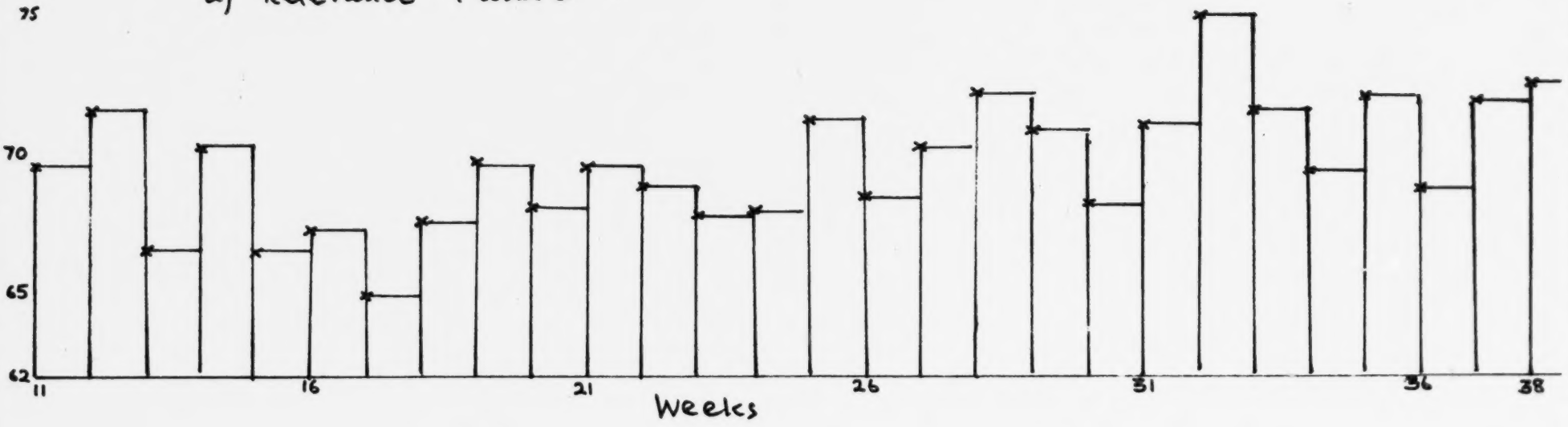


Fig.11. SDI profile performance – Precision (average of ratios)

a) Relevance 1 and 2



b) Relevance 1 only

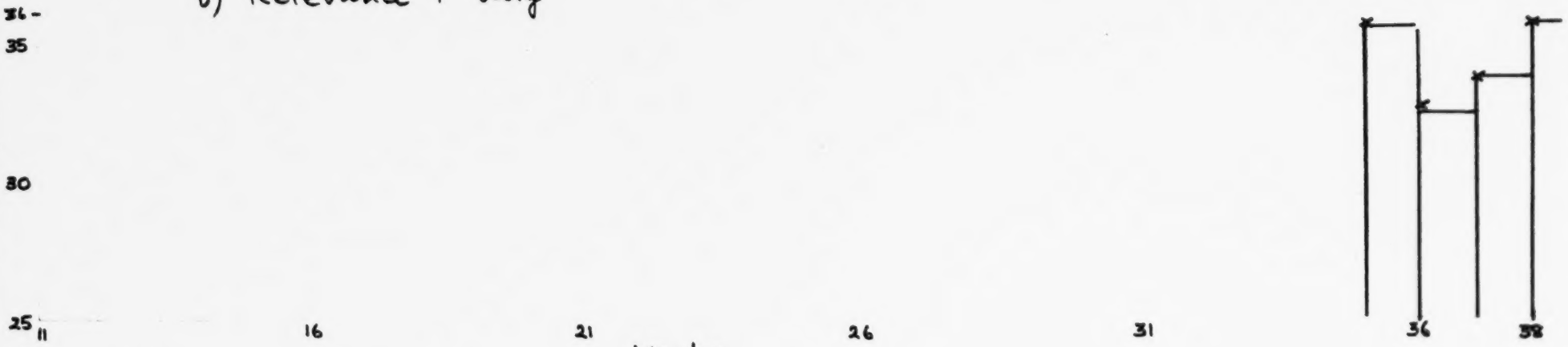
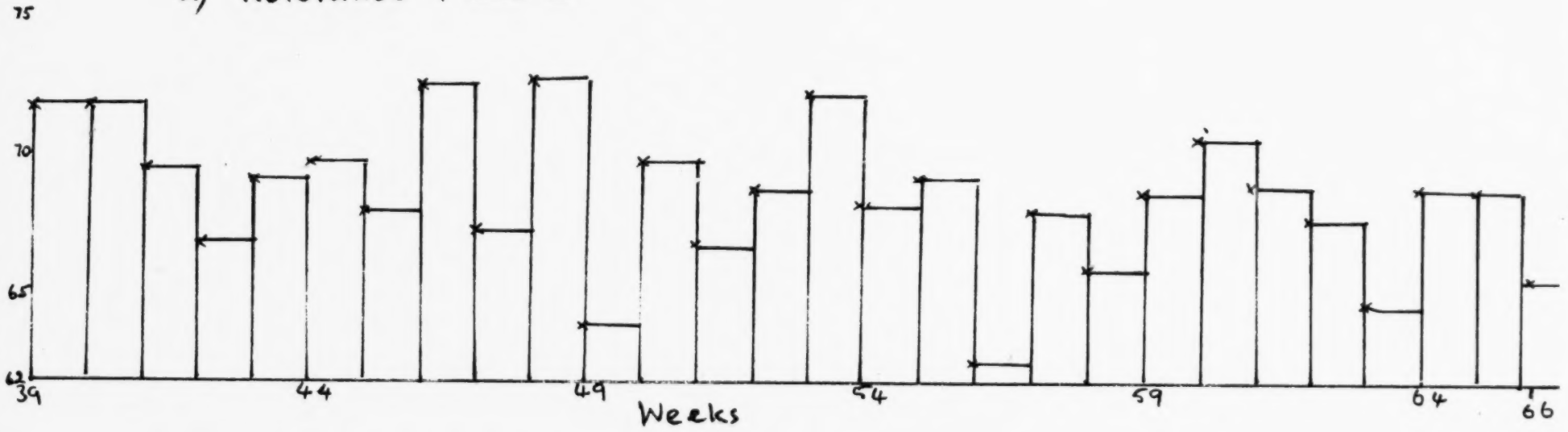


Fig. 12. SDI profile performance – Precision (average of ratios)

a) Relevance 1 and 2



b) Relevance 1 only

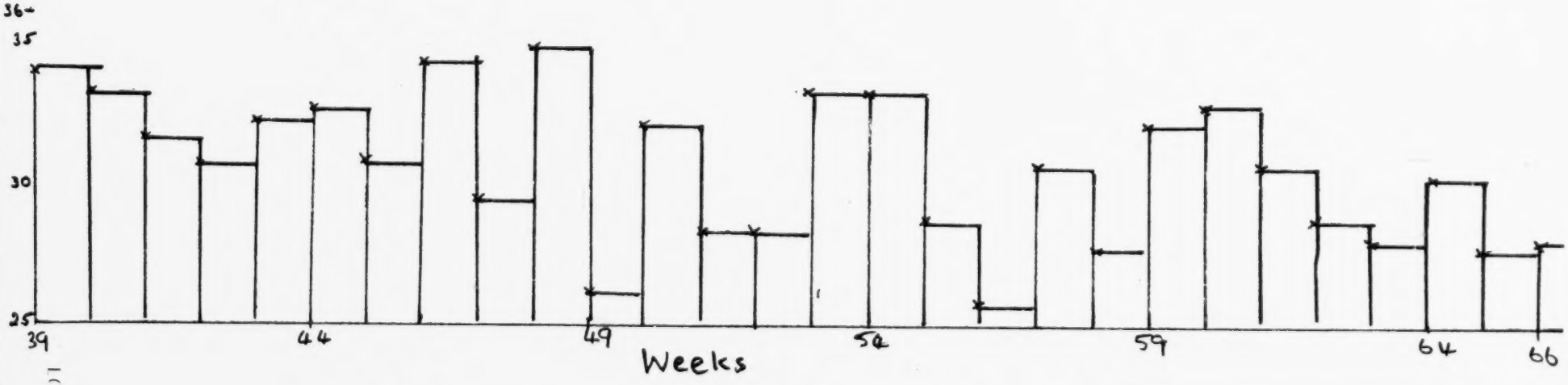


FIGURE 13. PRECISION PERFORMANCE OF ALL PROFILES OVER THE PERIOD WEEKS 011-066 (RELEVANCE 1 AND 2 DOCUMENTS COMBINED).

% PRECISION	NO. OF PROFILES			
	AVERAGE OF NUMBERS		AVERAGE OF RATIOS	
	No.	%	No.	%
0	2	0.3	2	0.3
1-10	-		-	
11-20	5	0.9.	5	0.9
21-30	10	1.7	15	2.6
31-40	26	4.5	21	3.6
41-50	51	8.8	48	8.3
51-60	93	16.0	102	17.5
61-70	122	21.0	112	19.3
71-80	111	19.1	120	20.6
81-90	88	15.1	88	15.1
91-100	68	11.7	63	10.8
Total	576	100	576	100

Fig. 14 Precision performance of all (576) profiles - Relevance 1 and 2 documents (average of numbers)

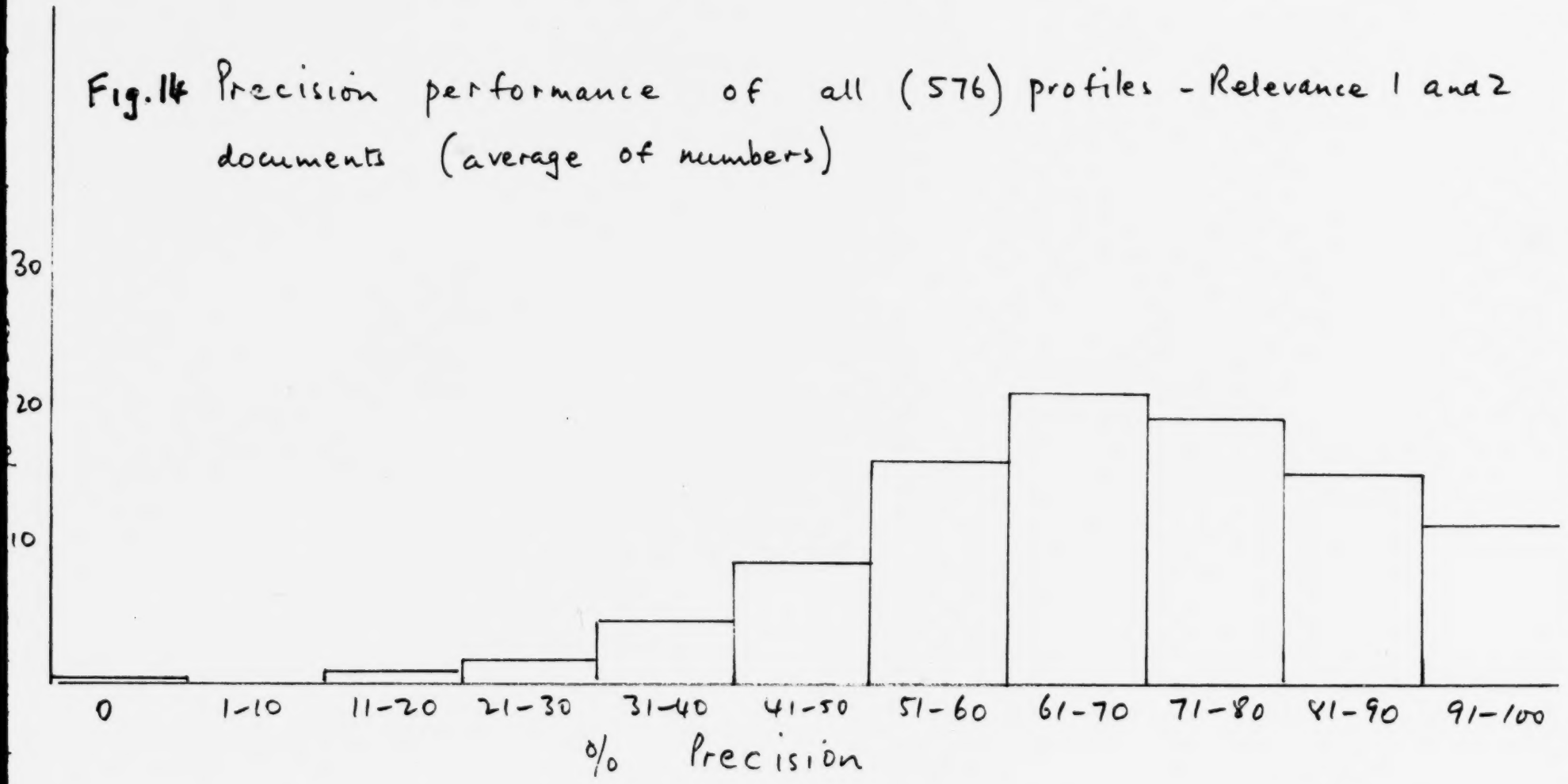
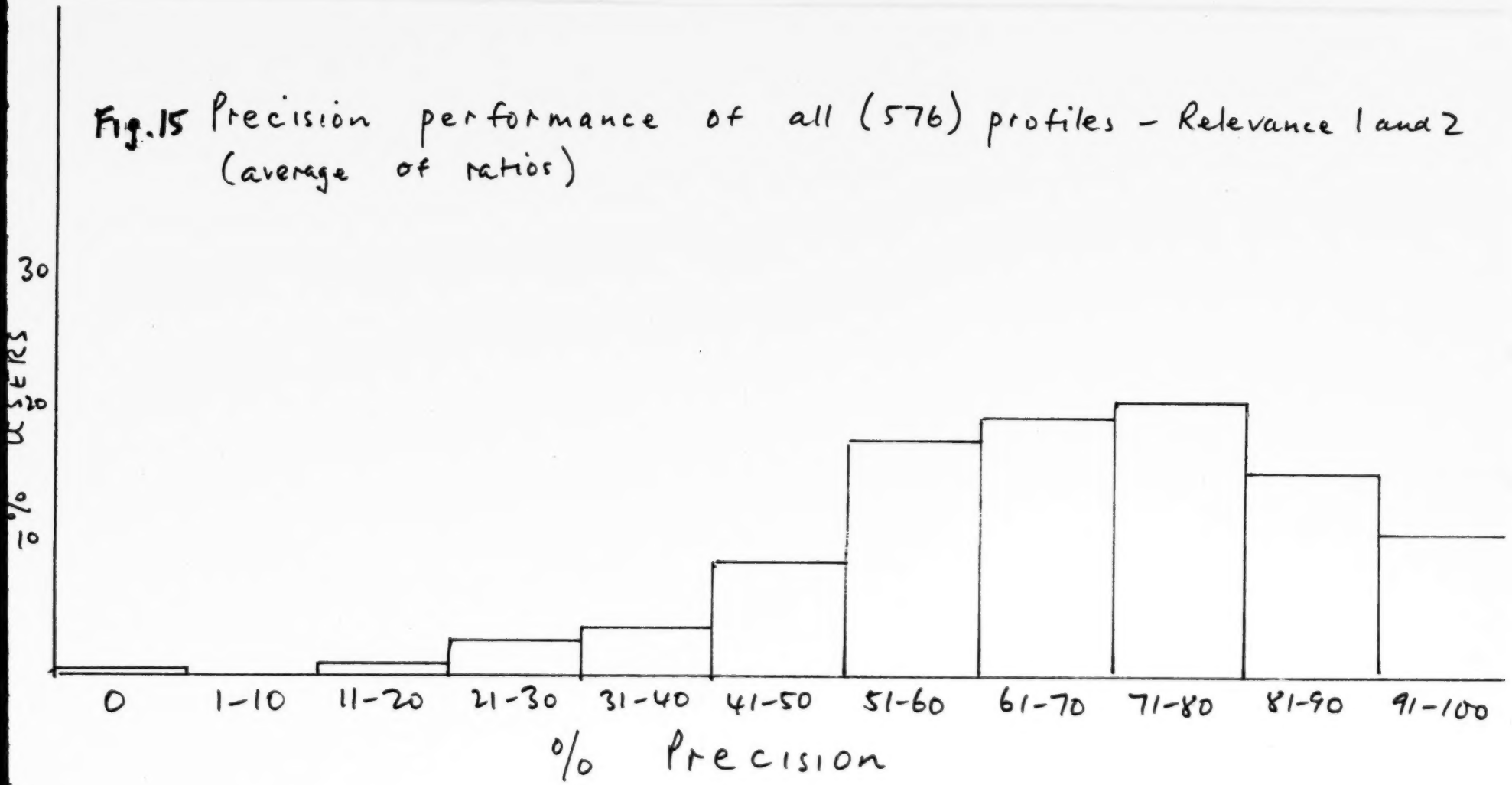


Fig. 15 Precision performance of all (576) profiles – Relevance 1 and 2 (average of ratios)



Figures 16. PRECISION PERFORMANCE OF 104 UNMODIFIED PROFILES OVER THE PERIOD WEEKS 011-066 (RELEVANCE 1 AND 2 DOCUMENTS COMBINED.)

% PRECISION	NO. OF PROFILES			
	AVERAGE OF NUMBERS		AVERAGE OF RATIOS	
	No.	%	No.	%
0	-	-	-	-
1-10	-	-	-	-
11-20	-	-	-	-
21-30	-	-	-	-
31-40	1	1.0	1	1.0
41-50	5	4.8	7	6.7
51-60	13	12.5	15	14.4
61-70	20	19,2	19	18.3
71-80	21	20.2	20	19.2
81-90	24	23.1	25	24.0
91-100	20	19.2	17	16.3
Total	104	100	104	100

Fig. 17. Precision performance of 104 unmodified profiles - Relevance 1 and 2
(average of numbers)

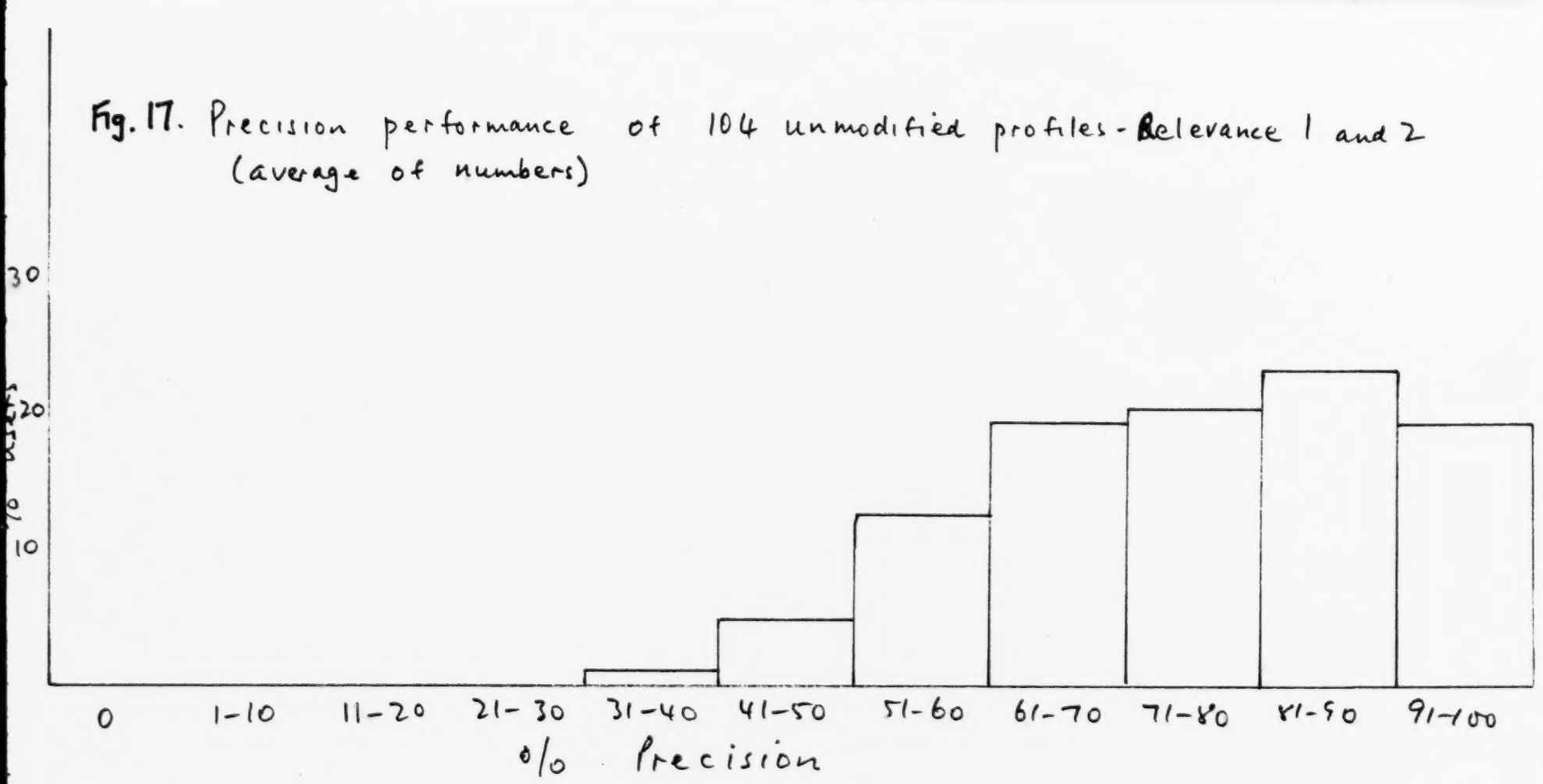


Fig. 18 Precision performance of 104 unmodified profiles - Relevance 1 and 2
(average of ratios)

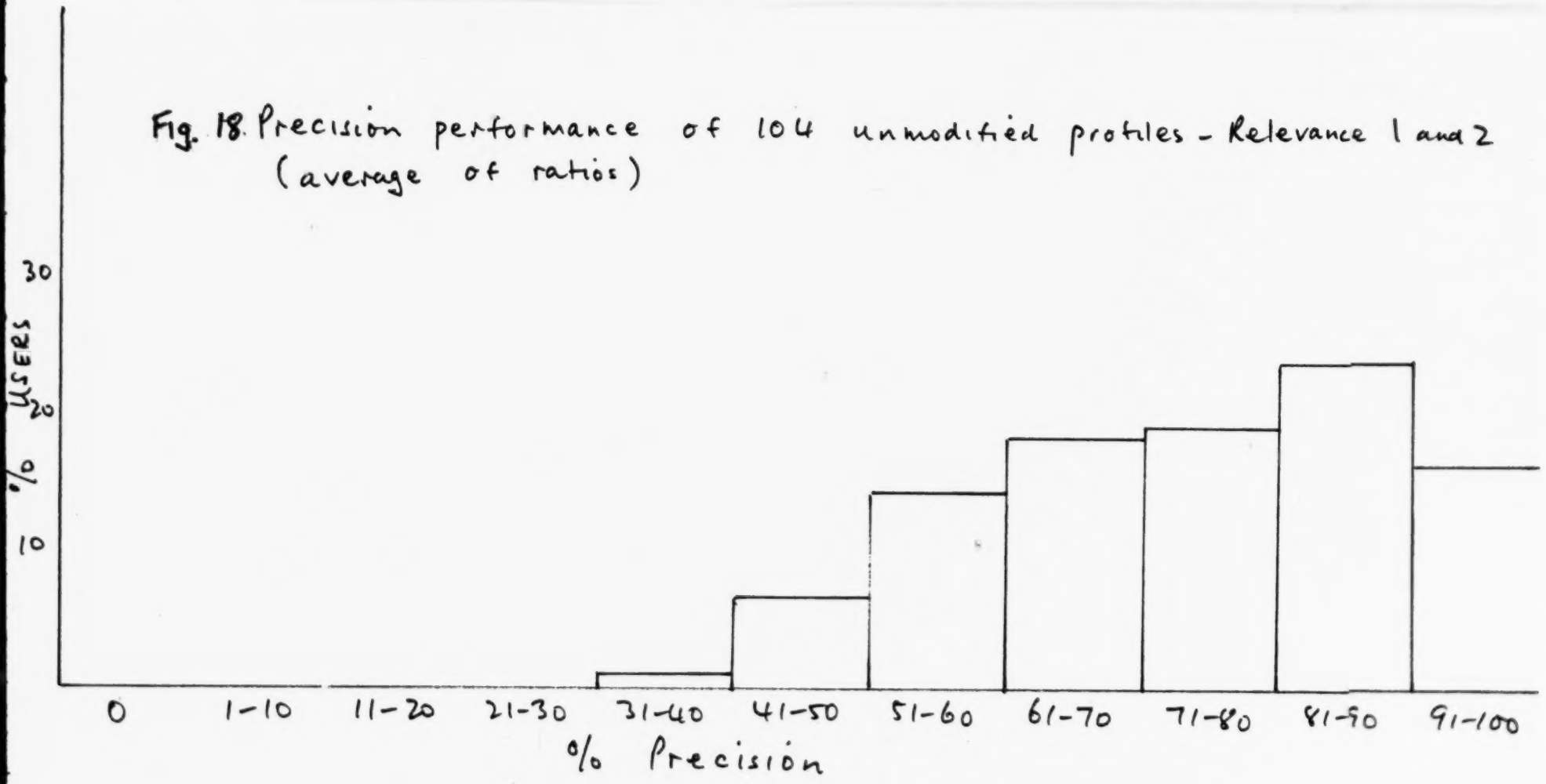


Figure 19. PRECISION PERFORMANCE OF SDI PROFILES OVER THE PERIOD WEEKS 011-066 (RELEVANCE 1 AND 2 DOCUMENTS COMBINED) - UNIVERSITIES

% PRECISION	NO. OF PROFILES			
	AVERAGE OF NUMBERS		AVERAGE OF RATIOS	
	No.	%	No.	%
0	-	-	-	-
1-10	-	-	- -	-
11-20	2	1.2	2	1.2
21-30	3	1.8	5	3.0
31-40	9	5.3	4	2.4
41-50	8	4.7	10	5.9
51-60	23	13.6	28	16.6
61-70	33	19.5	30	17.8
71-80	41	24.3	40	23.7
81-90	26	15.2	26	15.2
91-100	23	13.6	23	13.6
Total	168	100	168	100

Fig. 20 Precision performance of 168 University Profiles - Relevance 1 and 2
(average of numbers)

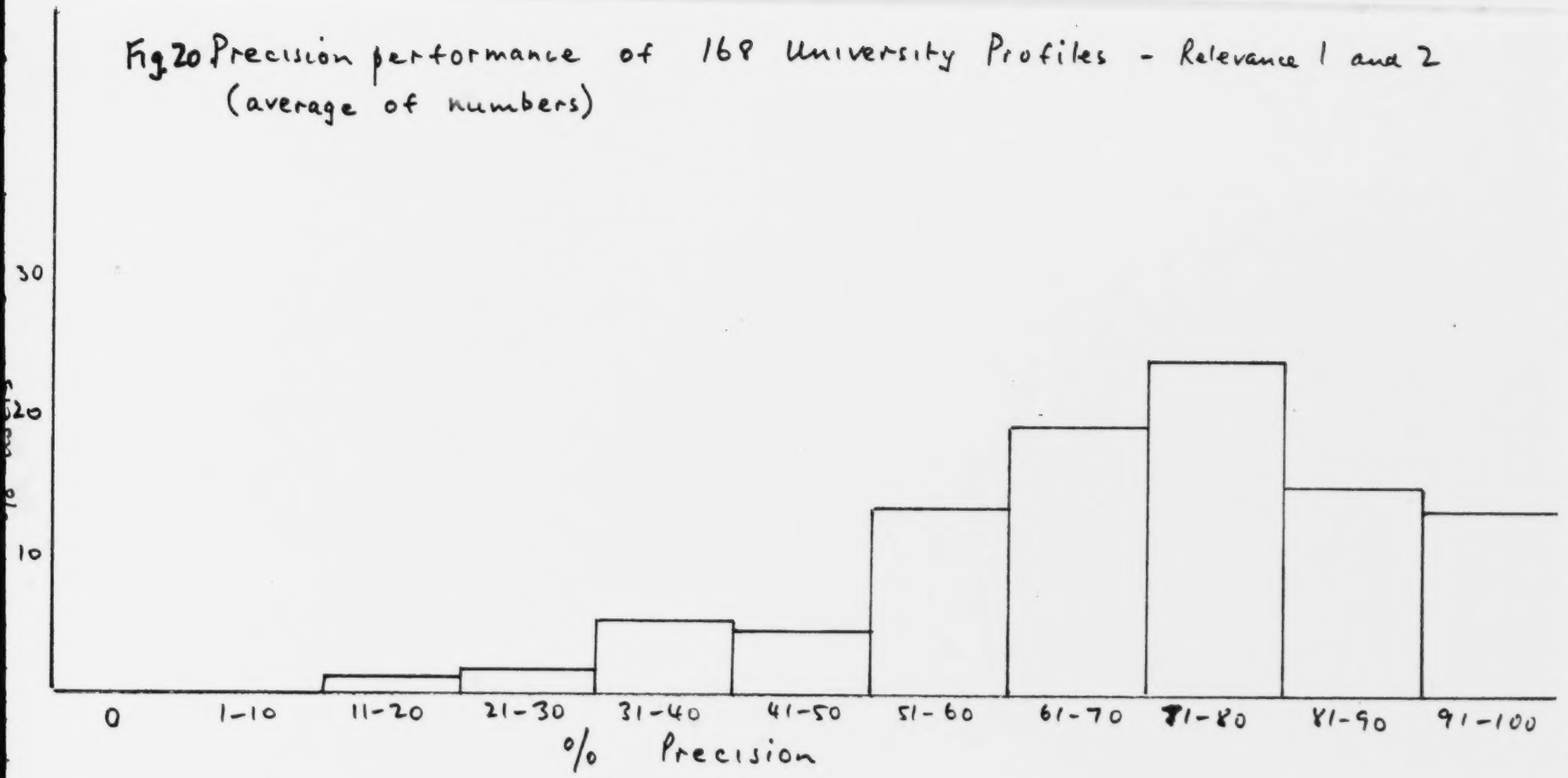


Fig. 21 Precision performance of 168 university profiles - Relevance 1 and 2
(average of ratios)

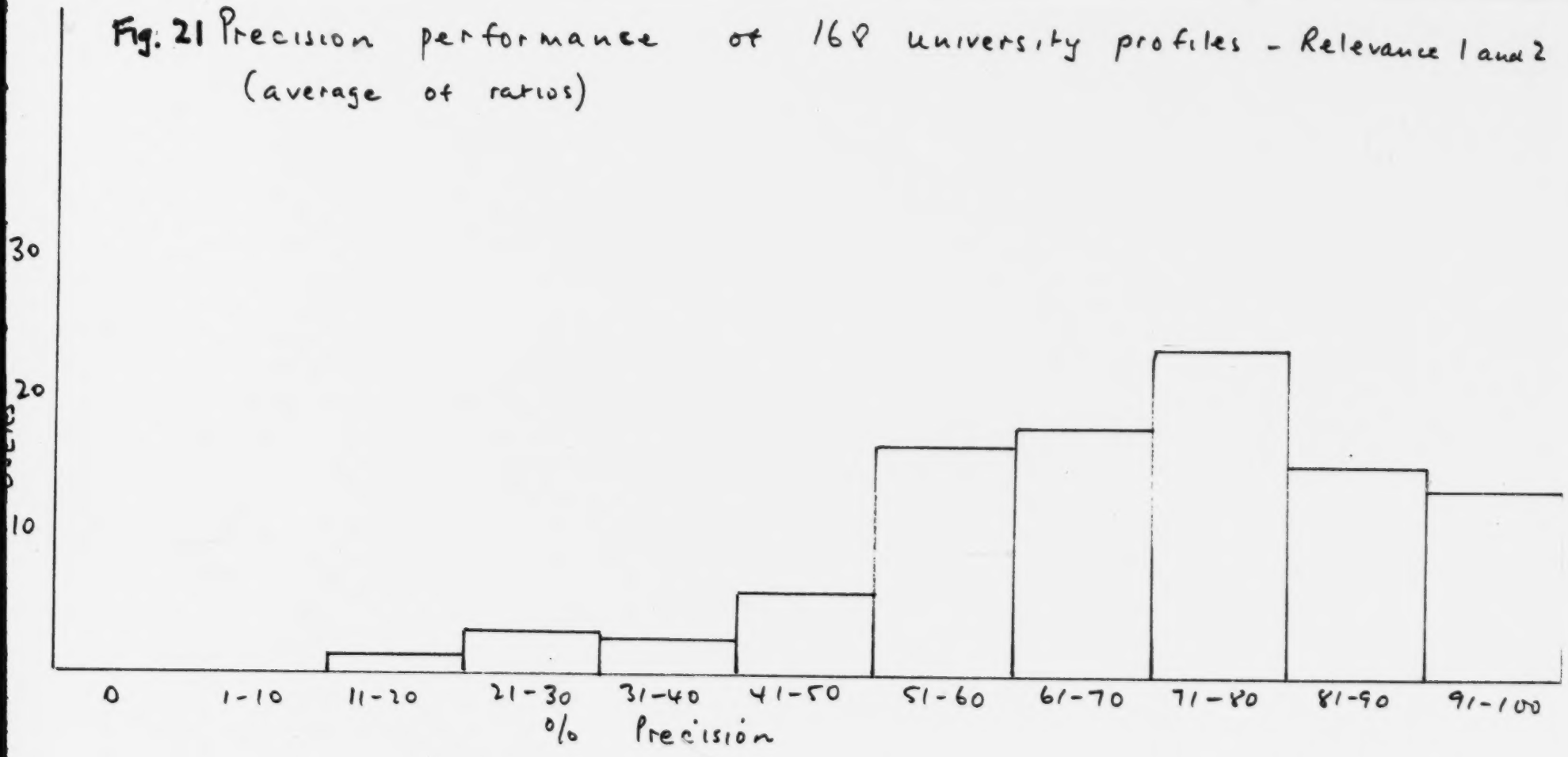


FIGURE 22. PRECISION PERFORMANCE OF SDI PROFILES OVER THE PERIOD WEEKS 011-066 (RELEVANCE 1 AND 2 DOCUMENTS COMBINED) - GOVERNMENT ESTABLISHMENTS.

% PRECISION	NO. OF PROFILES			
	AVERAGE OF NUMBERS		AVERAGE OF RATIOS	
	No.	%	No.	%
0	-	-	-	-
1-10	-	-	-	-
11-20	1	0.5	1	0.5
21-30	3	0.6	5	2.7
31-40	11	6.0	10	5.5
41-50	15	8.2	11	6.0
51-60	29	15.8.	31	16.9
61-70	44	24.0	41	22.4
71-80	33	18.0	37	20.2
81-90	21	11.5	25	13.7
91-100	26	14.2	22	12.0
Total	183	100	183	100

Fig. 23 Precision performance of 183 government establishment profiles - Relevance 1 & 2
(average of numbers)

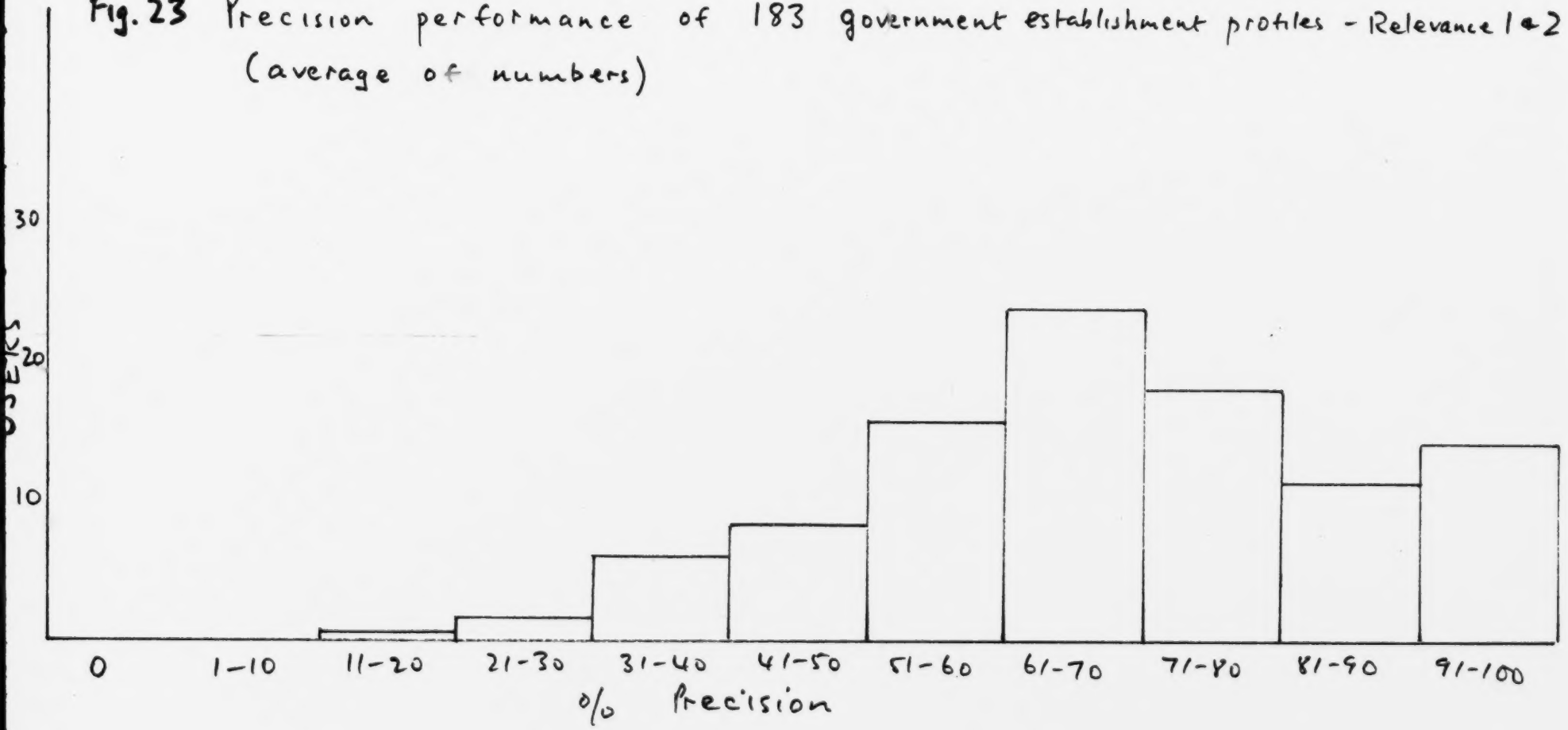


Fig.24. Precision performance of 183 government establishment profiles - Relevance (+)
(average of ratios)

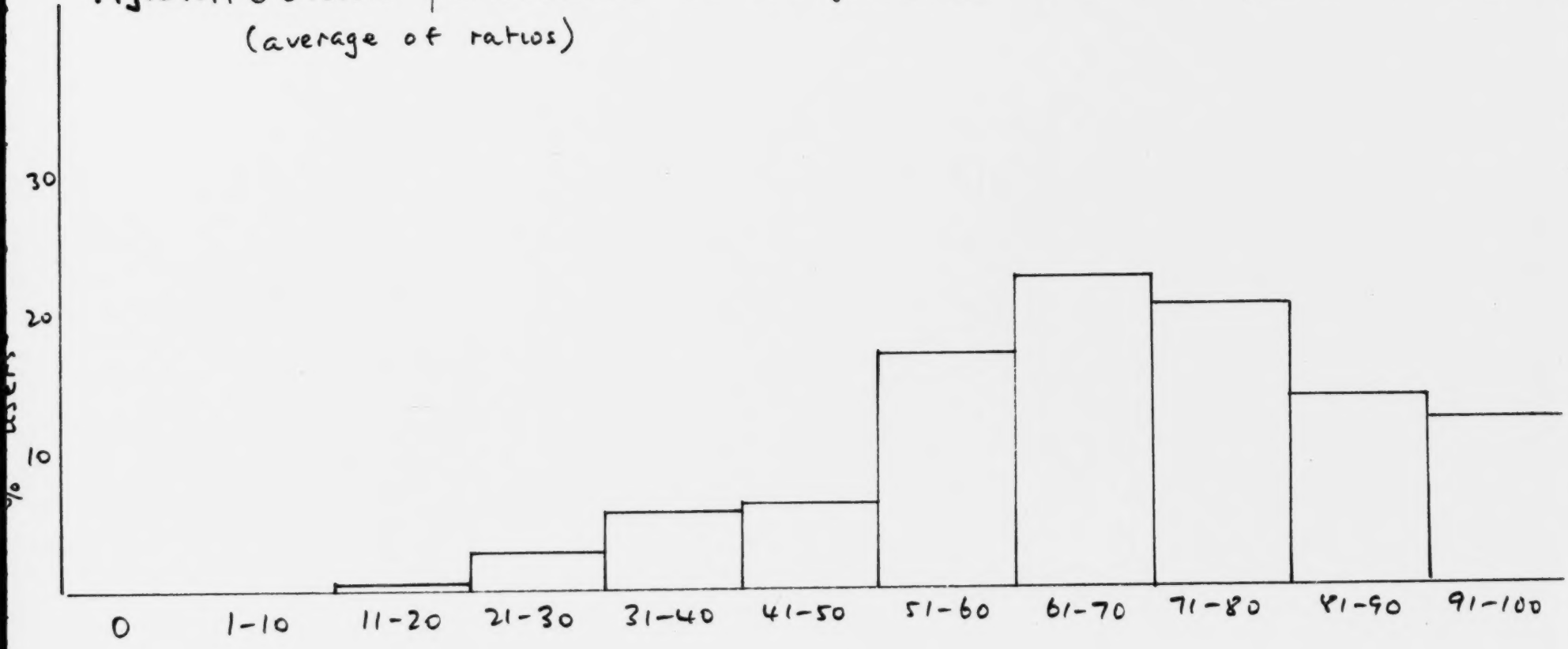


FIGURE 25. PRECISION PERFORMANCE OF SDI PROFILES OVER THE PERIOD WEEKS 011-066 (RELEVANCE 1 AND 2 DOCUMENTS COMBINED) - INDUSTRIAL FIRMS.

% PRECISION	NO. OF PROFILES			
	AVERAGE OF NUMBERS		AVERAGE OF RATIOS	
	No.	%	No.	%
0	2	1.1	2	1.1
1-10	-	-	-	-
11-20	2	1.1	2	1.1
21-30	4	2.2	5	2.6
31-40	3	1.6	4	2.2
41-50	19	10.3	20	10.8
51-60	35	18.9	37	20.1
61-70	39	21.2	34	18.5
71-80	32	17.4	36	19.6
81-90	33	17.9	30	16.3
91-100	15	8.1	14	7.6
Total	184	100	184	100

Fig. 26. Precision performance of 186 industrial profiles - Relevance 1 and 2 (average of ratios)

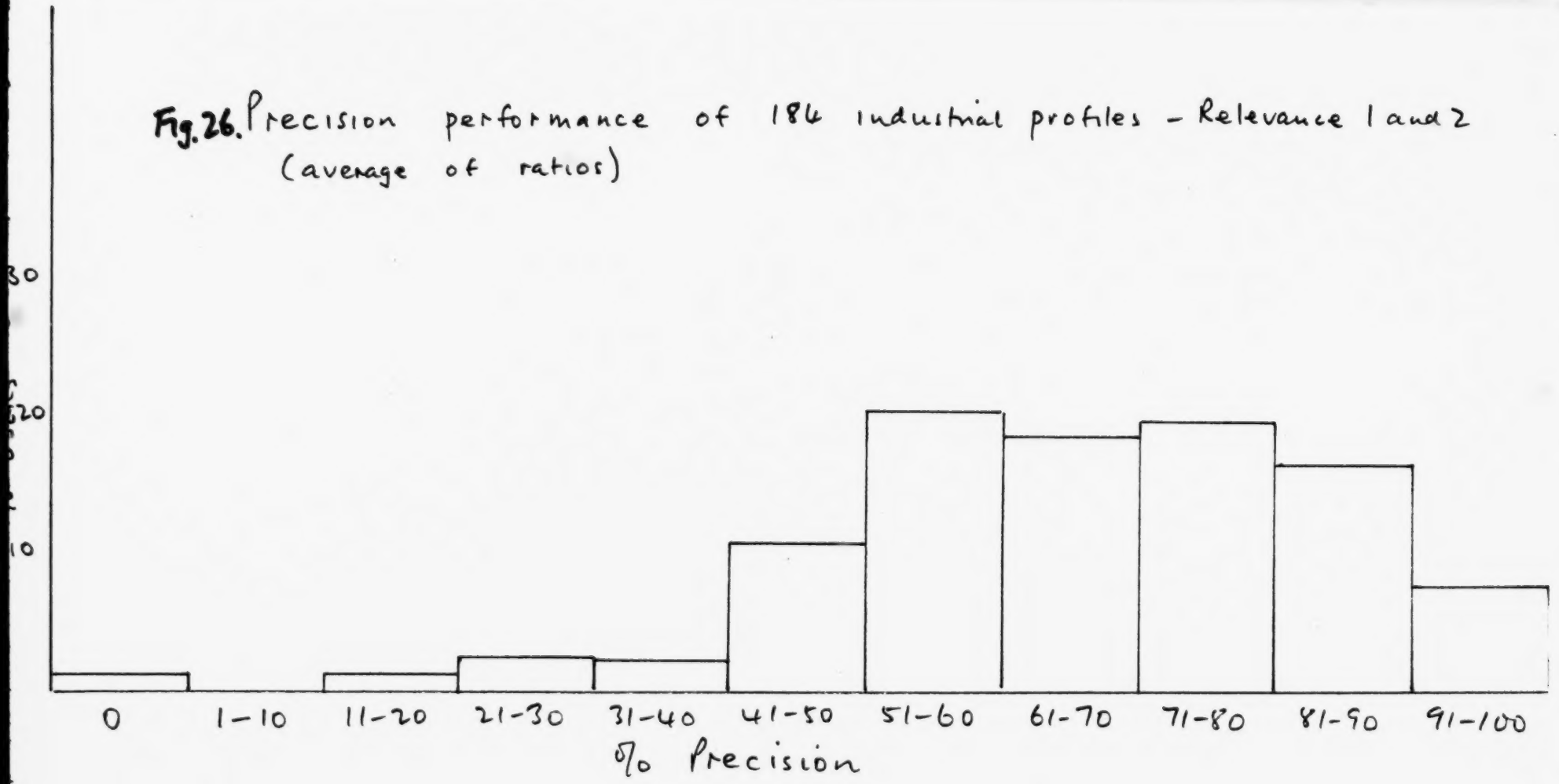


Fig. 27. Precision performance of 184 industrial profiles - Relevance 1 and 2 (average of numbers)

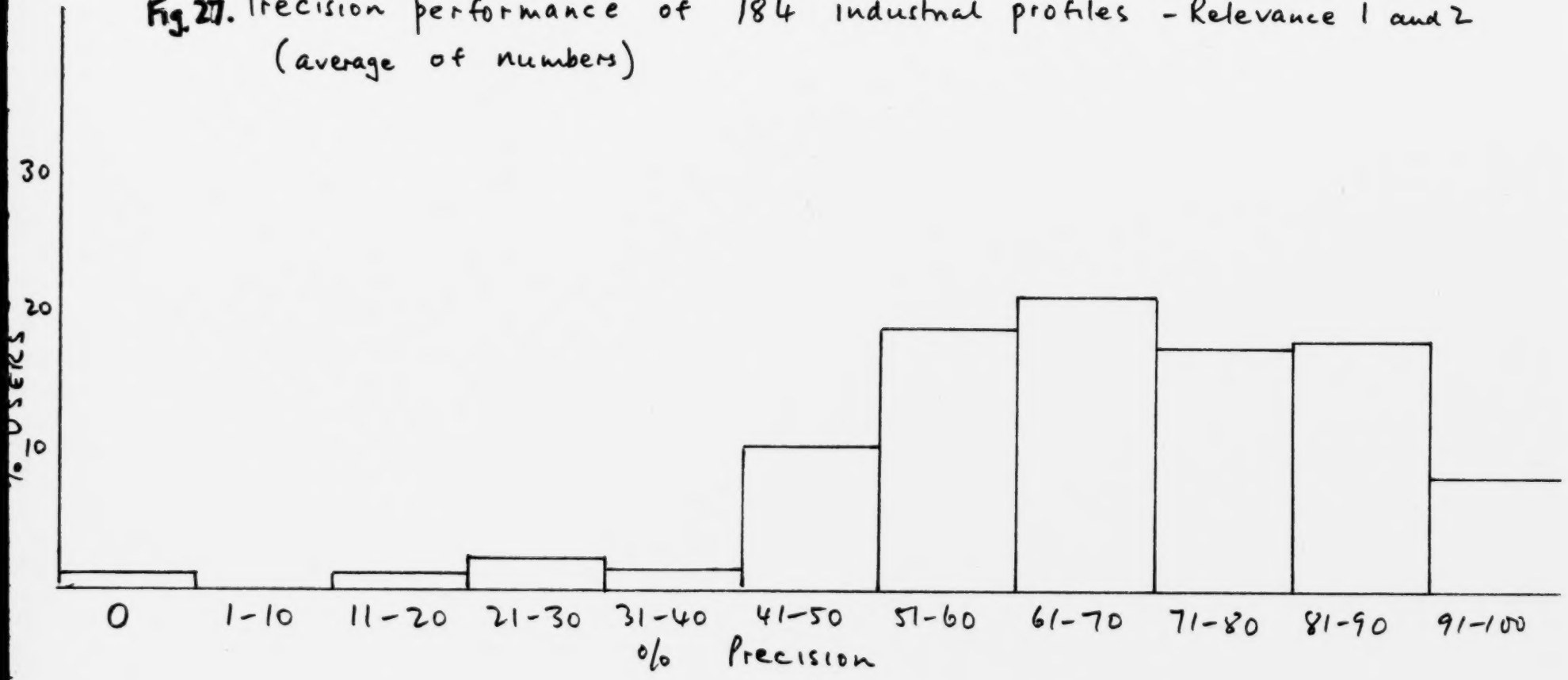


FIGURE 28. PRECISION PERFORMANCE OF SDI PROFILES OVER THE PERIOD WEEKS 035-066 (RELEVANCE 1 DOCUMENTS ONLY) ALL PROFILES AND 142 UNMODIFIED PROFILES - AVERAGE OF NUMBERS.

% PRECISION	NO. OF PROFILES			
	ALL PROFILES		UNMODIFIED PROFILES	
	No.	%	No.	%
0	7	1.3	1	0.7
1-10	55	10.1	10	7.0
11-20	115	21.2	23	16.2
21-30	128	23.6	31	21.9
31-40	88	16.3	25	17.6
41-50	57	10.5	20	14.1
51-60	42	7.8	13	9.1
61-70	27	5.0	8	5.6
71-80	16	3.0	7	4.9
81-90	5	1.0	2	1.4
91-100	3	0.5	2	1.4
Total	543	100	142	100

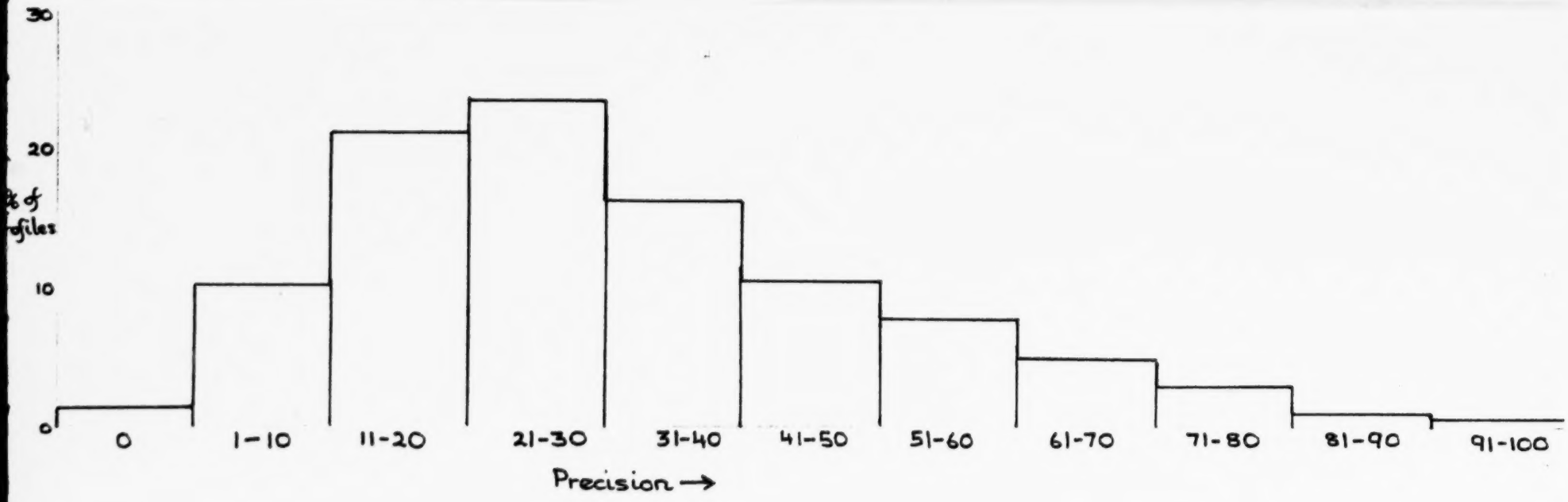


Fig. 29. Precision performance of all profiles - Relevance 1 only
(average of numbers)

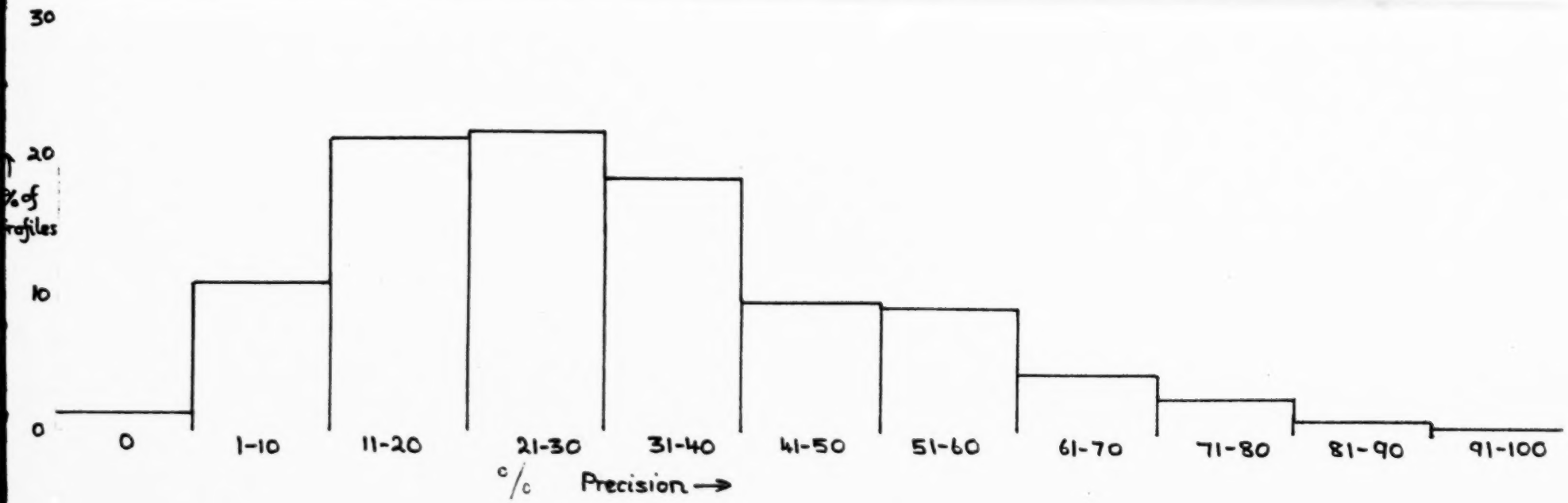


Fig. 30. Precision performance of all profiles - Relevance 1 only (average of ratios)

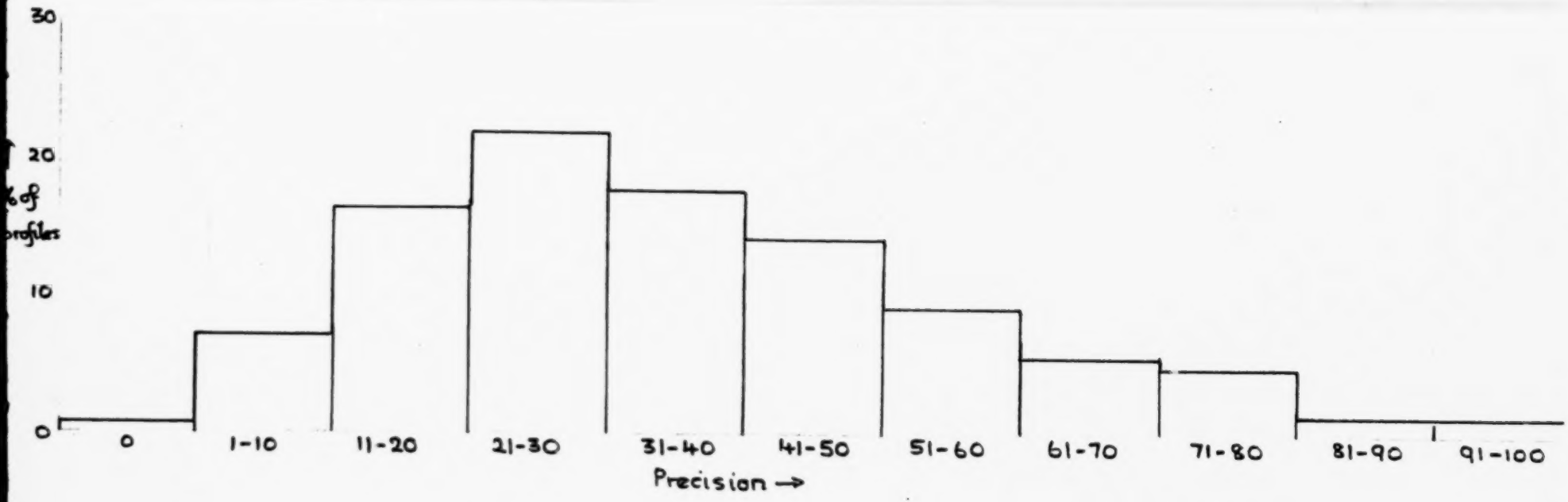


Fig. 31 Precision performance of 142 unmodified profiles - Relevance 1 only (average of numbers)

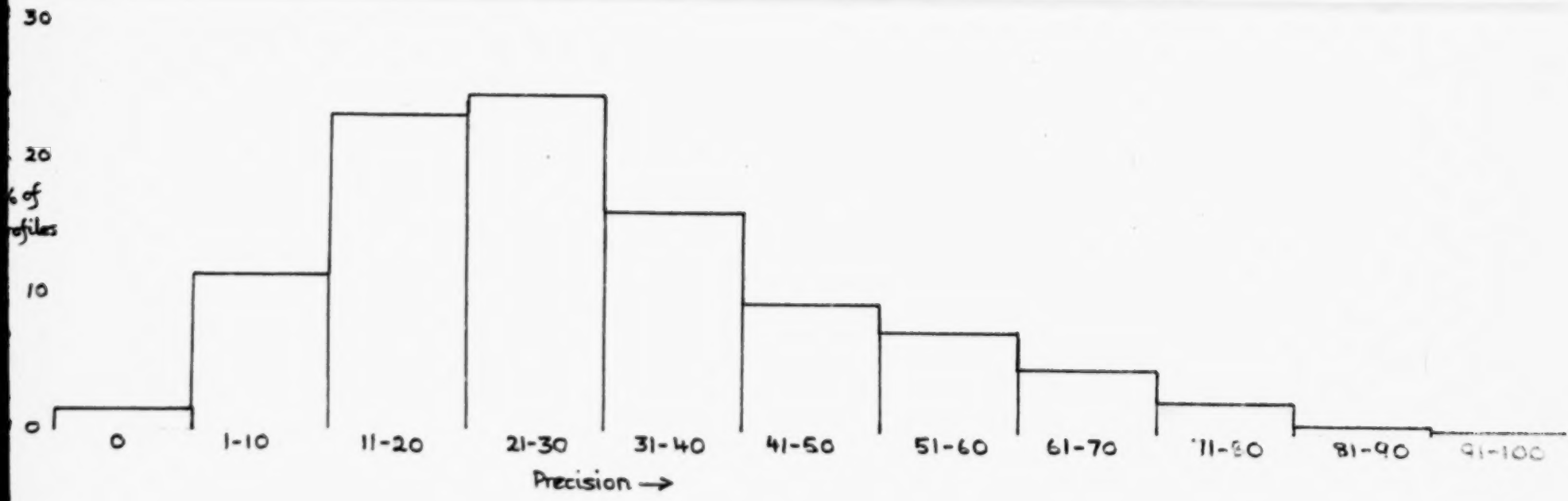


Fig. 32. Precision performance of 401 modified profiles - Relevance 1 only (average of numbers)